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Hugh Cecil Earl of Lonsdale.

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MRS. JACQUELINE B. MARS

AN

ABSTRACT

OF

THE PROCEEDINGS

OF THE

VETERINARY MEDICAL ASSOCIATION

DURING ITS FOURTH SESSION,

1839-40.

BY ORDER OF THE COUNCIL.

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"It is quite time that *Veterinary Medicine* should cease to assert, and commence to prove; that it should re-examine what it has hitherto believed, together with its grounds of belief; and not be content, in these days of a better philosophy, with its ancient dogmas, or with what it acts on from habit, but with that alone which it adopts from conviction."—M'Culloch.

AN

ABSTRACT OF THE PROCEEDINGS

OF THE

VETERINARY MEDICAL ASSOCIATION

DURING THE SCHOLASTIC SESSION 1839-40.

By Order of the Council.

THE First Meeting of the Fourth Session was held at the Freemasons' Tavern on Monday, November the 18th. There were present the Professors Sewell and Spooner, Messrs. W. J. Erasmus Wilson, Professor of Anatomy, Physiology and Pathological Anatomy at Sydenham College; J. Curtis, Lecturer on Comparative Anatomy and Physiology, St. Pancras, and Mr. Wilkinson, Surgeon; and some private friends of Professor Sewell and other gentlemen. Of Veterinary Surgeons, there were Messrs. Barthe, E. Braby, Charles, E. Clarke, Dale, Daws, Dycer, Easton, Ernes, Field, Higgs, Hill, Jones, King, jun., M'Kenna, Murch, Meginnis, Salter, E. Sewell, F. J. Sewell, Simonds, Smith, W. C. Spooner, Turner, Wallis, T. Wallis, Wardle, Wilkes, Woodger, Wright, and Youatt. Thirty-seven Students were also present, making altogether, with the Secretary, seventy-four individuals; a greater number than had attended any of the previous Anniversaries of the Association. The evening was spent in the utmost cordiality.

Professor Sewell was called to the Chair:—

He congratulated the meeting on the commencement of this their fourth session. It was gratifying to see so many rallying round an Association, the pride of our profession, and so intimately connected with its reputation and improvement. They were met under somewhat different circumstances than at the commencement of the last year. Their Patron had paid the debt of nature. He was a man of acknowledged talent, and to him the profession was deeply indebted.

A noble institution, the Central Agricultural Society, had allied itself with the Veterinary College, and it was determined that the instruction of the pupil should be extended to other objects—cattle and sheep—connected with the prosperity and wealth of the country. He would endeavour that these plans should be carried into execu-

tion. He could rely on the talent and co-operation of Mr. Spooner, who was now appointed Assistant Professor, and Mr. Morton's valuable lectures on Pharmacy would comprise every useful object.

He trusted that that unanimity would prevail at the meetings of the Association by which they had hitherto been distinguished. He did not think that discord could now intrude itself, or, if it did, it would be promptly and effectually repelled.

He had now to perform an important and a pleasing task, namely, to notify the awards of the Council, and the distribution of certificates of merit on which they had determined to those who had distinguished themselves during the last session.

He was, in the first place, directed to present the Silver Medal of the Association to Mr. F. J. SEWELL, of London, for his Essay on "The Anatomy and Physiology of the Ear of the Horse." Considering how young a member of the profession Mr. Sewell was, this essay was highly creditable to him—it was worthy of a place among the records of the Association. He could wish that every young veterinary surgeon would feel equal emulation, and practise equal diligence. *He* had particular pleasure in presenting him with this medal, and he trusted it would become a heirloom in his family for generations long to come.

He next presented a Certificate of Membership to Mr. SIMONDS for his excellent and erudite Essay on "Hernia in the Horse." The history of the black mare would long live among the readers of THE VETERINARIAN, and the lovers of skilful and scientific practice. The narration of cases like this, while it reflected the highest credit on the operator, would stamp a value on the records of the Association.

A similar Certificate had been awarded to Mr. METHERELL for his Essay on "Phrenitis in the Horse." It was a disease not so well understood as many others. The mode of treatment which Mr. Metherell had advocated was worthy of serious attention.

Mr. WALLIS well deserved a similar Certificate, not only for the lucid history which he has given of the early treatment of the foot of the horse, but for his candid acknowledgment of the value of Mr. Turner's "Unilateral Shoe," and his zealous advocacy of it.

Mr. ERNES was entitled to much praise for introducing the important subject of "Rumination." His Essay was peculiarly valuable, as containing a satisfactory account of the opinions of the French Professors on the Anatomy and Physiology of the Stomachs of Ruminants. The time was arrived when subjects like these assumed much interest and importance.

It was peculiarly gratifying to him to have again to notice with commendation the labours of Mr. F. J. SEWELL, and to present him with another token of the good opinion of the Association.

"The Diseases of the Urinary Organs" was certainly a wide field to traverse, but some important elucidations had been elicited.

Mr. SPARROW's subject was new and valuable. A knowledge of "The Conformation of Cattle and Sheep" would soon become as necessary to the veterinary surgeon as that of the horse. Mr. Sparrow had shewn himself quite at home in describing "the points" of ruminants, and well deserved the Certificate of Membership, and the cordial thanks of the Association.

The subject of "Fistulous Wounds" had been well treated on by Mr. GARRAD. He was pleased with the spirit, and yet the becoming modesty, with which Mr. Garrad had defended the decisive mode of treatment which he had been accustomed to practise. He had well earned the Certificate of Membership.

Last, but not least, was the Essay of Mr. JONES, "On the Influence of Physical Agents on Life." This was a boundless as well as a most important subject of consideration; and Mr. Jones had given ample proof of his industry and his talent. A Certificate of Merit was justly his due.

The Chairman then announced the subjects for Prize Essays during the present Session.

It had been determined that the Prize Essay of the last year for practitioners should still remain—"Vesicular Calculi in the Mare and Horse, and the best Mode of Extraction."

For students the Council had appointed, "The Anatomy and Physiology of the Teeth of our Domesticated Animals, particularly as illustrative of the Age."

MR. MORTON then delivered the following eloquent and valuable

ORATION.

Mr. President and Gentlemen,—We are met again to celebrate the birthday of the Veterinary Medical Association, honestly and successfully devoted to the acquirement and dissemination of science and of truth.

Cicero has said, that, "before all other things, man is distinguished by his pursuit and investigation of truth." He pants after knowledge, and a desire for its possession appears to be innate. The discovery of any thing new, great, or wonderful, fills him with pleasing emotions; and hence the sciences always present to the considerate mind objects worthy of examination.

Periodical commemorations of important events have received the sanction of the wise and good in all ages, and in all countries. With us, as individuals, it is customary to set apart that day from others, when first the rays of the morning's sun fell on our opening

eyelids; as well as that on which the mystic noose was tied by the youth cinctured with the yellow zone—a noose as difficult to unravel as the Gordian knot! It is the same with societies or assemblages of individuals; and there are periods in the onward march of each when it is prudent to stop and take a retrospective view of the progress that has been made. As a body, it may be said that the members of the Association now occupy a prominent position; and, like the traveller who stands on an eminence, they can look back on the ground which they have somewhat profitably passed over, and, at the same time, survey the bright prospect that lies before them.

It is but three years since we awoke into liberty and life; and, yet, within that short period more has been accomplished than by any other similar society in a corresponding length of time. Surely this is matter for high gratulation, and it should be an incentive to increased exertions, for we hardly know what may not be achieved by zealous and honourable co-operation. The light emitted by the combustion of the mixed gases is comparatively feeble until it is resisted by the dull and refractory lime; and then it vies in splendour with that of the noonday sun; and, when Night has gathered under her dark mantle the last gleam of twilight, it directs the mariner across the pathless deep, and warns him of dangers that are near.

I have ventured to compare the Association to an oasis—a spot of fertility on which the mental eye loves to rest. Its soil is luxuriantly rich, and only asks for a little cultivation to cause it to bring forth even more and richer fruits than it has yet done.

To many that are here present I may address myself, and ask them, if it does not often awaken a gratifying reflection that they were instrumental in its formation? The threatening storm which was gathering around it while struggling in its infancy has been dispersed. The thunder has died away in the distance, and the lightning's flash has not harmed it; while the sun of science, bursting forth, has dissipated the cimmerian darkness, and cheered and illumined the loved spot, making it the centre where the best feelings unite that can actuate the members of a profession, and form a bond of union indissolubly strong. That it may ever remain so, I am sure is the fervent wish of us all.

These meetings, too, demand at least a passing notice; they are epochs to which the memory often reverts with many pleasurable reminiscences. It is true they are also admonitions which warn us of the passing time; and, although the pathway of some of us may have been chequered, and clouds still rest upon it—for few have continued sunshine—yet, when these meetings return, the gloom is dispelled, and we forget our sorrows because we

are surrounded by our friends. But I must leave this, lest it should be said

> "I made my episode too long,
> And tried my friends to grace my song,"

and come to the subject of my address.

It will be remembered that the advantages resulting from chemistry, as applied to veterinary science, were left unnoticed by Mr. Spooner, in his admirable oration delivered at our Anniversary Meeting last year; and, at its close, he unexpectedly announced that this would be undertaken by me. Having been made such honourable mention of by him, and the announcement having been so kindly received by you, it became my duty at once to acquiesce. The only reluctance I feel arises from a conviction of my incompetency. I, however, throw myself on your clemency, and proceed to offer a few observations, general at first, and afterwards directed to some important particulars.

The vastness and importance of my subject compel me to ask, How can that be confined within limits which is boundless? and what necessity there is to attempt to prove that which is self-evident? Yet I must endeavour to execute my task, although I fear that the anticipations of many will be disappointed, since of necessity only a superficial view of my subject can be offered. At the same time I take a high stand, and maintain that the education of the veterinary surgeon should embrace a greater number of the divisions of science than even that of the human surgeon, because he is without those aids in his professional vocation which the latter receives.

A high authority has said, "He that does not know those things which are of use, and necessary for him to know, is but an ignorant man, whatever he may know besides."

We live in an age of experiment and improvement. One invention succeeds to another without exciting much surprise; and the advances which the sister arts and sciences are making in this our day are such as heretofore employed the labour of centuries. And while all are making such progress, can it be that veterinary science alone advances not? Banish the thought! It must not, shall not be!

A question has arisen in the minds of some, whether the veterinary art can yet lay any claim to the distinction of a science. We will let Sir John Herschel decide it: he says, "Art is the application of knowledge to a practical end. If the knowledge be merely accumulated experience, the art is *empirical*; but if it be experience reasoned upon, and brought under general principles, it assumes a higher character, and becomes a SCIENTIFIC ART." A shadow, at least, of our position, may I think, be here seen.

The progress of any science is at first gradual, and its sources are often comparatively small. It may be compared to a river. It is dimly seen in silvery lines trickling down the face of some distant mountain. These coalesce into a stream, and, having reached the valley, other waters unite themselves with it, and thus it becomes a mighty torrent, which at times rushes with impetuosity over jutting rocks, suffering nothing to impede its course and, anon, it peacefully traverses its deep-fathomed bed, until it falls into the boundless ocean. Here its tract is tortuous, and, wending its way through pleasant lands, it tempts the hesitating votary. There it silently rolls on in deeps profound which defy the plummet's test. Again it passes over some pebbly bed, and, musically-murmuring, chides the waverer; telling him, that although there are abysses where the unskilled may be lost, yet there are also streams where no cause for fear exists.

Almost every day's experience proves that, in the present age, there is scarcely any thing beyond the power of genius to overcome. Physical difficulties vanish before the light of the mind. The frost of winter and the heat of summer are rendered innocuous by the means which Science affords us of resisting them, while her magic wand seems almost to annihilate time and space. "The lightning of heaven is in her hand, and the winds and the waves obey her behest."

It would be an interesting investigation to trace the progress of medical science throughout its various phases—from its small and seemingly uncertain beginning in the most remote periods of history, when a few traditions constituted all that was known, to the accumulated records and learned disquisitions of the Greeks and Romans. From the obscurity with which it was enveloped during the darkness of the middle ages to the splendour with which it has burst forth in the nineteenth century, when modern literature lends its aid, and the best feelings that can glow in the breast of man are called forth to mitigate the many "ills that flesh is heir to." This, however, would be misplaced here, since *we* have nothing to do with it until the Arabians introduced chemical substances as remedies; besides which, it is an acknowleged fact, that the science of medicine is more indebted to the zeal and industry of the Arabians than to the learning of the Greeks or the refinement of the Romans.

This unquestionably arose from their having early cultivated alchemy; and in their fruitless and ridiculous search after an "elixir vitæ," they accidentally discovered many compounds which were employed by the physicians for the cure of disease, such particularly as those of mercury and antimony.

It is true that several years transpired before chemical agents

were generally used; but I have just said that the progress of every science is always gradual.

To the Arabians the honour is certainly due of having first conjoined the sciences of chemistry and medicine: and who is bold enough to gainsay their value? In those days, he who laboured to relieve the sufferings of his fellow-man did not think it derogatory to his dignity to extend his aid to the brute creation; and thus chemical substances were soon introduced into veterinary practice.

There is a singular story told of the monk Valentine, who wrote the "Currus Triumphalis Antimonii." He had been trying the effects of antimony upon some pigs, and found it to be an excellent alterative, and that they acquired flesh. Reasoning like a Bacon, he thought that what was good for a pig was good for a monk; and pitying his brethren, who were almost worn out by long fasting, he treated them with an antimonial dinner! But never was the difference between a pig and a monk more clearly shewn. The monks all died, and left no memorial except the fat pigs they did not consume, and a name to the substance which had caused their death—*antimoine*—the enemy of the monk.

At that period medical science was only empiricism, and to be designated an empiric was rather an honour than a reproach, as it implied a physician who followed experience. In our day the term belongs to a class of persons who afford ample proof how far ignorance and conceit may carry a man.

To return to chemistry. From the crudities of alchemy and the darksome cloisters of the monks, chemistry emerged to enjoy the full blaze of the noonday of science. And where will its applications end? or who can number them? It is now placed among the exact sciences, it being a science of number, weight, and measure; while it has effected more for the weal of man than any other division of natural philosophy. Time would fail me were I to attempt to enumerate what it has done. Through it we approach to a knowledge of the ultimate constitution of the material universe and the laws which govern the combination of bodies. It makes us familiar with the influence of heat, of light, and of electricity. By the application of analysis to organized and unorganized substances we discover the proximate principles of the one, and the ultimate elements of the other; and thus we appear to divide these great classes of nature, and yet the like substances are found in both. "The phenomena which accompany chemical action," remarks a writer already referred to, "are sometimes wonderful. The terrific violence of the different fulminating compositions is such, that they can only be compared to spirits evoked by

the spells of a magician, manifesting a destructive and an unapproachable power, which makes him but too happy to close his book and break his wand, as the price of escaping unhurt from the storm he has raised." At others, by the exertion of the same force, working in silence and unseen, principles are eliminated which are of the highest value.

But what shall we say of the application of chemistry to the arts? Take only one illustration—but that is the noblest gift ever presented by Science to her sister Art—the mighty Steam-engine! He who made this so valuable—the immortal Watt—also discovered the composition of water; and by the expansive force of heat upon this fluid a motor power is obtained which enables man to exceed the swiftness of the horse, to launch fearlessly into the bosom of the deep, and to sit secure amid elements which, uncontrolled, would destroy him.

It would be easy to bring forward other proofs, and shew how that which was once thought nothing worth is, by the application of chemistry, made available for many useful purposes. It will be only necessary to name the water flowing from gas works, and from which the compounds of ammonia are principally obtained; and the refuse of lead mines, from which a pigment is made termed "Dutch lead;" so that the waste heaps are now carefully searched over for a substance that, a few years since, was thrown away as useless. I might also be allowed to mention the water from copper mines, from which a precipitate is thrown down that affords a greater quantity of metal than is yielded by the ore obtained from the mine, the working of which it impedes. Likewise the disengagement of chromic acid from its native combination with iron—a mineral found in abundance in the Shetland Isles, and by which so many beautiful colours used in the arts are prepared.

I could also refer you to the processes of procuring sugar from rags, and bread from saw-dust, or a material for making of paper from the peat bogs of Ireland, and the extraction of nutriment from bones; but, as this might be thought amusing rather than instructive, and being a deviation from my present intention, I forbear; and pass on to observe, that, for an acquaintance with the active principles of vegetables, and the ability to obtain many valuable medicaments from the mineral kingdom, we are indebted to chemistry. Therefore, if applicable only in this respect, does it not constitute an essential part of the education of the veterinary surgeon? How, without a knowledge of its principles, can he successfully follow a profession with which it is so intimately blended?—how profitably and satisfactorily associate himself with those to which his avocation gives him an undoubted

right? It must, however, be confessed that hitherto the science of chemistry has not received from the veterinary profession the attention and support that it merits.

On the general applicability of chemistry it would surely be supererogatory to dwell, and time would fail me to accomplish such a task. There is not an art or a science to which it does not contribute some aid, and each in return yields assistance to it; and thus enlinked, and gradually ascending the grand scale, we are led by the study of them

"Through Nature up to Nature's God:"

for they are but emanations of his power—imprints of the wisdom and design of Him who first gave laws to matter, and the sea its bounds; who,

"Ere the infant Sun
Was roll'd together, or had tried his beams
Athwart the gloom profound,"

said, "Let there be light;" and light beamed on the new-born world.

But we have to adduce some particulars; and if hitherto we have failed to afford any proof of the advantages derivable from chemistry, here we must succeed. By it we are enabled to demonstrate the composition of the air which we and all sentient beings inhale, and to shew its uniformity, for it has been examined in every part of the world. At all heights—from over the frozen plains of Lapland and the parched deserts of Arabia—from the region of the glaciers whence falls the avalanche, and where bounds the chamois, and the fertile valley of its base—from the surface of the sea, and 22,000 feet above it—from the poles and at the equators—from the charnel-house, and from under the azure arch of heaven, and yet no appreciable difference in the proportions of its essential constituents has been detected.

We can also exhibit the changes which take place in this pabulum by the respiration of man and animals, by combustion, and the many other processes which are constantly going on upon the earth's surface, and by which its apparently all-important principle, oxygen, is withdrawn; and thus is seen the beauty and the wisdom of that reciprocating law which obtains between the two great kingdoms of organized Nature,—animals and vegetables.

We likewise point out the effects produced by the diffusion of certain gaseous compounds through it. Thus, in marshy districts, where vegetation assumes its most luxuriant growth, a peculiar matter is engendered by the action of the sun's rays on moist decomposing vegetables, the influence of which can be traced for miles around; and although nothing, even at the present day, is

absolutely known respecting the nature of malaria—whether it be some of the gaseous compounds of hydrogen and carbon, or a poison secreted by living vegetables in a state of disease—yet there is no doubt of its baneful action, and to chemistry we look for a means to detect the insidious agent, and to counteract its malignant power. Need I say that the fens of Lincolnshire and Essex give off an abundance of this aeriform poison! The like is emitted from the woods of Hampshire and the borders of Epping Forest; the same is known to exist in Holland, France, and America; while the jungle fever of India, and the fatal maladies that befel our countrymen at Walcheren, are too familiar to most of us.

Dr. McCulloch, speaking of the effects of malaria in Italy, says, "The fairest portions of that fair land are a prey to this invisible enemy. Its fragrant breezes are poison. The dews of its summer evenings are death. The banks of its refreshing streams—its rich and flowery meadows—the borders of its glassy lakes—the luxuriant plains of its overflowing agriculture—the vallies where aromatic shrubs regale the eye and perfume the air—these are the chosen seats of this plague, the throne of malaria. Death here walks hand in hand with the resources of life, sparing none. The labourer reaps his harvest but to die; or, he wanders amid the luxuriance of vegetation and wealth, the ghost of man, a sufferer from his cradle to his impending grave—aged even in childhood, and laying down, at length, in misery that life which was but one continued disease."

Truly this is an appalling picture; and yet the poison is so subtle as to elude all eudiometric research—so minute in quantity, as not to be detected by the most careful analysis. There have been many and shrewd conjectures, but, as before remarked, nothing has been yet absolutely proved. This, however, is not surprising, if we reflect that the infectious effluvium from disease is not more tangible.

What may arise from the inhalation of very minute portions of certain kinds of matter has been demonstrated in some experiments by Berzelius on seleniuretted hydrogen.

Selenium is a metal of volcanic origin, and possesses the property of combining readily with hydrogen; and it is a well known fact that pestilential vapours are given out during the eruption of volcanoes, and, being diffused through the air, they may become the cause of epidemics and epizootics. This view of the subject agrees with the theory of the origin of certain diseases, as given by our President in the first oration delivered before the members of the Association in 1837.

We will let the celebrated chemist just adverted to speak for him-

self: he says, "In the first experiment I made with seleniuretted hydrogen, by inhalation, I conceive, I let up into my nostrils a bubble of gas about the size of a pea. It deprived me so completely of the sense of smell, that I could apply a bottle of concentrated ammonia to my nose without perceiving any odour. After five or six hours I began to recover the sense of smell, but a severe catarrh remained for fifteen days. On another occasion, while preparing this gas, I became sensible of a slight hepatic odour, from the vessel not being completely closed; but the aperture was very small, for, when I covered it with water, small bubbles were seen to rise about the size of a pin's head. I felt at first a sharp sensation in my nose; my eyes then became red, and other symptoms of catarrh began to appear, but only to a trifling extent. In half an hour I was seized with a dry and painful cough, which continued for a long time, and which at last was accompanied by an expectoration, having a taste exactly like that of the vapour from a boiling solution of corrosive sublimate. These symptoms were removed by the application of a blister to my chest."

When the cholera first made its appearance in England in 1832, a fact recorded by Dr. Prout is equally illustrative. He was engaged in making some meteorical observations, during which he was required carefully to notice the pressure of the atmosphere, and he was particularly struck with the increase of weight which the air had suddenly acquired; indeed, he thought that he must have made some mistake, and he proceeded to repeat his experiments; but he found the results to be precisely the same. This augmentation of the weight of the air he states to have been uniform during all the time—at least six weeks—in which he was engaged in these experiments; and the direful scourge was also during this period carrying on its devastations. Dr. Prout conjectures the cause of this to have been some noxious gaseous body diffused through the lower regions of the atmosphere considerably heavier than the air it displaced, and to its presence he attributed the disease then prevalent.

Even grave-yards give off mephitic odours, and the unconscious dead have slain their thousands: hence the value of distant cemeteries.

"And who would lay
His body in the city burial-place,
To be thrown up again by some rude sexton,
And yield its narrow house another tenant,
Ere the moist flesh had mingled with the dust,
Ere the tenacious hair had left the scalp,
Expos'd to insult lewd and wantonness?
No; I will lay me in the village ground."
* * * * * * *
"Beneath a little hillock, grass o'ergrown,
Swath'd down with osiers, just as sleep the cottiers."

Through these and many other causes which are in operation, the air surrounding large towns is often contaminated with ammonia, and some organic matters in solution, and, sometimes, sulphurous acid gas is present, this last being obtained from the fuel. These all prove prejudicial to health when inhaled; and yet hardly less so is the atmosphere of an ill-ventilated house, where cleanliness is disregarded. The same may be said of crowded apartments. Hence the frequent fainting of females. The excess of carbonic acid gas produces a depression of the vital powers which they cannot resist. Some persons, however, are enabled to contend against it; but after having endured the crush of the crowd amid the burning of tapers and of lamps, when the morning's light dawns in upon them, if they dare to let it, they exhibit a sallow countenance and a sunken eye, accompanied with listlessness and languor—a state affected by many who would be thought to be fashionable.

How different this to the ruddy hue of health seen on the cheeks of lasses sporting on the village green! They laugh, buoyant with joy, and, unshackled by the trammels of fashion, they feel themselves as free as the ambient air they breathe. But, alas! too many of the follies of the town have reached the country, and soon, I fear, but little difference will be seen. The descriptions of rustic manners will be treated as dreams of poets; or, perhaps, accepted as illustrations of a barbarous and uncultivated age, in which it unfortunately happens that we now live!

Of what takes place in ill-ventilated stables from a similar cause, there was one who was wont to speak, if not in words of eloquence, at least in those of truth and power. His mantle has fallen on another. May *he* be endowed with a double portion of the spirit of his predecessor!

Chemistry likewise makes us acquainted with the constituents of water, a fluid which covers about three-fourths of the earth we inhabit, and demonstrates its important uses in the economy of nature and of art. It proves it to be as necessary for the maintenance of the life and well-being of man and animals, as the air of which I have just been speaking, since, without it, they would soon cease to exist, "having wandered about in spectre forms, amid frightful deserts, the ground dried up beneath their feet, and without even a blade of grass to mitigate the terrors of the dreary waste, or a drop of water to cool their parched lips." If, then, we seriously reflect for a moment, we shall be convinced how requisite it is that there should be not only an abundance of this fluid, but that it should be comparatively pure. In this our favoured isle, happily, we seldom experience the horrors of extreme thirst; but there are climes in which the "cup of cold water" is the greatest boon which man can offer to his fellow-man. Its influence on the animal

frame, too, is an important consideration, and one that much interests us. It enters largely into it as a constituent, giving flexibility to the tissues, and, taken into the stomach, it acts as a solvent of the alimentary substances, whilst it supplies the loss which is constantly going on by the various secretions. By its evaporation from the surface of the body or otherwise, its temperature is regulated. Its exhalation in a state of vapour from the blood is of far greater benefit to the system generally than is usually considered. By this exhalation the respiratory apparatus is moistened, thus rendering the act of respiration easy and pleasant; whereas, if this did not take place, the breathing would become hot, painful, and laborious, arising from a want of humidity in the body, as is the case during the prevalence of fever or the existence of thirst.

There can be no doubt but that a great portion of the watery parts of the blood are thrown off by the lungs, and hence we see how readily all parts of the body yield up their moisture, and sympathize with these organs when they are inflamed. The skin becomes dry and parched by a withdrawal of moisture from this investiture. The lungs being quickened in their action, require a greater quantity of watery fluid to relieve the otherwise hot and painful respiration. Hence the good which arises from sponging the surface of the body in fever, and the relief afforded by the diffusion of watery vapour through the air, in the locality of a patient labouring under increased vascular action. The wants of the system are supplied by imbibition.

In a medicinal point of view, and when topically applied, its influence depends upon its temperature; but of the advantages hence resulting I am not now called upon to speak. They are obvious, and need no comment: still it may be a question whether we are not warranted in employing this agent in other ways than those usually adopted.

To the evaporation of water into the air we are also indebted for the fertilizing shower, and the dew which impearls the web of the gossamer. Thence, too,

> "The gloomy clouds find weapons, arrowy sleet,
> Skin-piercing volley, blossom-bruising hail,
> And snow, that often blinds the traveller's course,
> And wraps him in an unexpected tomb."

We also perceive the wisdom that prevails in diffusing a greater quantity of watery vapour in the atmosphere of tropical climates, and during the summer season, when it is most wanted for the purposes of life; and thus it is that we are taught the value of this fluid, and the existence of many chemical laws is proved. Other illustrations might easily be adduced; but we refrain, and

descend to the earth, out of which we were taken, and unto which we shall all again return.

Chemistry tells us that its surface, its mountains, and its plains, made up of various strata, consist of a few metals combined with oxygen. Some of these possess alkaline properties; others, inducing no alkaline reaction, are denominated the simple earths. Such the Creator chose as the location of the vegetable world, when he said,

> "Let the earth
> Bring forth the verdant grass, herb yielding seed,
> And fruit-tree yielding fruit after her kind,
> Whose seed is in itself."

These he gave as food to man and beast, animals endowed with instinct and with reason, and having a greater or a less complex structure, and which, by the process of assimilation, renders the elements of which these are constituted a part of themselves. What wonder, then, that when this mortal frame decays it moulders into dust? It would be well were we also to bear in mind that, after the formation of the body from the ground, "God breathed into man the breath of life, and man became a living soul."

> "This wings its way to its Almighty Source,
> The witness of its actions, now its Judge!
> That drops into the dark and noisome grave,
> Like a disabled pitcher of no use."

Thus, and not unintentionally, it has been shewn how chemistry teaches us the composition of those things which, in daily life, are constantly coming before us, and which we need every moment of our existence. Three of the elements of the ancients—the air, the earth, and water—have been proved to be compounds; and the fourth—fire—is viewed as the result of electro-chemical action; while many natural phenomena at which the untutored shrink appalled receive an easy explanation by a reference to the same science. There is not an atom which can exist without an impression of its power; yea, the great globe itself is pervaded by it. The towering mountain, and the grain of sand that lies unheeded at its base—the vast expanse of ocean, and the trembling tear—the breeze that tints the cheek of beauty with the roseate hue of health, and the rude tornado—the clouds which roll in shapeless masses over our heads, and the ground we tread upon—the lightning's flash, and the loud thunder's roar—man's noble and erect form, and the abject worm that crawls at his feet—are all, more or less, under its controul.

Here is a subject full of instruction, and replete with beauty; for it gives proof of the wisdom and design of Him at whose command

order from confusion sprang—"when the morning stars first sang together, and all the sons of God shouted for joy."

> "Silence, ye troubled waves, and thou deep, peace,
> Said the omnific Word—your discord end."

But on this, however pleasing the theme, I am forbidden to enter.

And now, having advanced some proofs of the advantages derivable from chemical science as explanatory of Nature's operations, we are brought to that division in which its value *to us* is more strongly exhibited.

Do the laws of chemistry afford us no clue to the production of diseases? The influence of the gases on the blood—"which is the life of the animal"—demonstrates what may be effected by chemical agents from without; that is, by their being absorbed by the blood in its transit through the lungs. Many of them prove powerful poisons, destroying life in different ways; others cause derangement in function merely, which leads to an organic change, and thus the lyre is unstrung. Some effect this by stimulating to an inordinate degree the nervous and vascular systems; others act as sedatives, and, by depressing the vital powers, stay the onward course of that fluid which is essential to life. The noxious vapours given off from decomposing animal and vegetable substances are of this class, and also those disengaged from putrid water. Nor are the fumes of burning charcoal less deleterious, since it has been placed beyond doubt that, during the combustion of this substance, something besides carbonic acid gas is disengaged by which the air is rendered poisonous—probably some of the compounds of ammonia united with sulphuretted hydrogen.

Some of these gases have been eliminated by purulent matter undergoing decomposition, and this has been conjectured to be the cause of the maladies which are known to arise from the absorption of pus into the system; a subject to which the attention of the profession has been drawn during the past year in the pages of THE VETERINARIAN.

The excretions of animals also yield them; consequently they exist in sewers, and wherever the former are allowed to accumulate, as in cesspools and ill-ventilated stables. The same may have constituted a large portion of the animal poison of the late Professor Coleman; for there is no contravening the fact, that, where animals are congregated together within a limited space, and the air they are breathing cannot be renewed, they soon render poisonous the "balmy breath of life," and disease thins their numbers: hence the importance of ventilation.

They may also have been the cause of cholera and the plague, and constituents of miasm. The poisons of which I have been

speaking, floating in the atmosphere, and being inhaled, are absorbed by the blood, and produce their action on the nervous centers, giving rise to a train of diseases as frightful as the ills which emanated from Pandora's box. Hope, however, remains behind, that, by chemic aid, we shall be enabled to render them innocuous, and, indeed, it has already in some degree been accomplished.

There are, also, many medicinal agents which, being taken into the stomach, sensibly affect this vital fluid, and generate disorders not less insidious nor less fatal. At other times they are the means by which disease is successfully combatted and overcome, and their action is often referrible to chemical principles. How many illustrative proofs could here be brought forward, did our time permit! I must, however, content myself with two; and although they may be familiar to most of you, they are so much to the point, that I select them in preference to others.

Several lambs had died on a farm in one of the French arrondissements, the cause of which was very obscure. A veterinary surgeon being sent for, he carefully examined the sheep-house, and found the walls covered with moisture in the form of little drops, and which, mixing with the earthy particles, formed crystals. He also perceived that the lambs were continually licking these walls; and he was at once led to suspect the cause of the malady. He therefore proceeded to ascertain the nature of the crystals, and, applying the requisite reagents, he found them to consist of the nitrate of potassa.

The formation of the salt is easily explained: the air, charged with animal exhalations, was absorbed by the moisture, and, this becoming mixed with the calcareous matter of the walls, an artificial nitre-bed was formed in miniature.

Not, however, satisfied with this, he proceeded to analyze the contents of the stomachs of those which had died, and he thus obtained, by the ordinary pharmaceutical processes, the salt in the form of crystals. Now, suppose he had known nothing of the science of chemistry, and that it had not been taught in the school in which he was educated,—would his investigation have been conducted in the manner in which it was? Rather, I imagine, he would have been contented to assign the cause to some mysterious atmospheric influence—that cloak with which we can so easily enwrap ourselves, and indulge in much self-complacency and mental ease. Not that I mean for a moment to question the truth of the position, that many diseases have their origin in a peculiar and impure state of the air: indeed, I think I have stated enough to substantiate it: but I believe that we are too apt to be satisfied with this apparent cause, to the exclusion of others which may be in existence.

I come to my second illustration. In some provinces in Normandy the farmers employ whey, kept until it becomes putrid, for the cure of red-water in cattle. The professor of therapeutics at the veterinary school was informed of this. He did not despise and condemn the use of the agent, but, more wisely, set about to ascertain its composition, and to discover what gave to it its active properties. The result was, that he detected many of the compounds of ammonia, which are well known to be eliminated when animal matters are undergoing decomposition. The purer ammoniacal compounds have since been employed, and with success. Their mode of operation is, in all probability, explained by chemical laws. They counteract the peculiar acescent state of the ingesta, and, by their gentle stimulating influence, restore the lost tone to the organs of digestion.

But we may take even the food of those animals which are placed under the care of the veterinary surgeon, and from this shew that not only chemistry but botany also should be made his study. It is stated, that horses which have for some time been eating mow-burnt hay become affected with nephritis. What is the cause of this? Do the laws of chemistry afford us no assistance in our investigations? What is the state of the provender, and what are the principles which are set free? Is not the acetate of potassa which may be formed in the alimentary tube the cause? Chemical reasoning assuredly favours this view of the subject.

Again, horses turned out into salt-marshes are often attacked with diseases more or less of an inflammatory character. Anasarca is not uncommon, sometimes general, at others merely local. This has been occasionally followed by farcy, previous to which it has been observed, that the kidneys have been involved, and debility has supervened, under which the animal at length has sunk. Now, is it incorrect to look for the cause of this in the saline matters taken up into the vegetables on which the animals have been feeding?

I do not, of course, mean that these remarks shall apply to marshy lands generally, but only to those that are contiguous to the sea, and in cases in which there is a tendency to disease in the system. I am satisfied that I need not say a word about the sympathetic relationship which exists been the stomach, the skin, and the kidneys.

The state of the herbage, both in spring and autumn, in certain seasons, is likewise often such as to be productive of disease. Tympanitis is the prevailing malady; and when a dry summer is followed by a wet autumn, this sometimes exists as an endemic; for then the grass, although apparently luxuriant, possesses little nutriment, and soon runs into the putrefactive stage of fermentation, while

the impoverished state of the blood renders the animal less able to resist this unnatural action.

After the subsidence of floods, horses become similarly diseased. The debritus washed down by the rivers, although admirable for rendering the soil fertile, yet lodging on the herbage and being partaken of by animals, induces derangement of the digestive organs, which is followed by its well-known consequences; and these sometimes prove fatal—large quantities of the soil being found in the intestines.

Here, too, the curative means that are resorted to can be shewn to depend upon chemical principles for their action. Thus, in the first and earliest stages of this affection, ammonia is the agent usually employed; while in the latter stages this would prove wholly inert, and the compounds of chlorine alone be found of any avail. Examining, very lately, the gaseous matters contained in the first stomach of a sheep, and which had caused considerable distention of that viscus, I found them to consist of carbonic acid, and the compounds of hydrogen; and I have little doubt, that if the ingesta had been allowed to remain some time longer, these latter would have been much more abundant. Now, what do we deduce from a knowledge of this fact? Why, that the agent to be had recourse to for counteracting the deleterious effects of these gases is the chlorinated lime; and an acquaintance with the principles of chemistry at once explains to us its *modus operandi*.

It is likewise well known that cattle, in certain localities, are frequently carried off in great numbers. Is this always to be referred to nothing more than atmospheric influence, which stifles all further investigation? Should we not rather institute more searching inquiries into the peculiar state of the herbage, induced, perhaps, by physical agents, or ascertain whether some particular plant or plants may not grow there, and be the true cause of the evil? And what will so much aid us here as the twin sciences of chemistry and botany? Change of situation is commonly resorted to; and the remainder of the animals having fortunately got well, no more is thought of the matter. But this is not as it ought to be. The veterinary surgeon should be enabled to detect the insidious foe, whether it be in the pasturage or the soil; and this shews how necessary it is that agricultural chemistry should be studied by him.

But when will the proofs terminate of the advantages resulting from the science of chemistry as applied to veterinary medicine? As I proceed new ones seem to start up; and while I am despairing of doing even common justice to my subject, I am warned to draw towards a close. We are, in fact, but just entered on the vast field, and every step we take presents an attraction which tempts

our stay. You will, however, bear with me in one or two more illustrations, in which I promise to be brief.

Are not, I would ask, the principles of this science of the utmost value in enabling us to test the purity of the drugs which we employ? Are they not also necessary to effect a judicious combination of our therapeutical agents? Without some acquaintance with them, it is possible that, by the union of two substances, we may form an inert or a pernicious compound, and one altogether dissimilar from that which we were desirous of obtaining.

There is another important division of medicine to the aid of which chemistry oftener presents itself than any other. I refer to its checking the influence of poisons, and, by decomposing them, rendering them innocuous. Hence arises the value of counter-poisons or antidotes. And, after death has taken place, it is almost by chemical tests alone that we are able to demonstrate the agent which has been the means of destroying life. It has been justly remarked by Christison, that the frequency of death, accidental or otherwise, by poison—the interest usually attached to such events—the nicety of the inquiries by which their nature is brought to light, and the necessity of a comprehensive knowledge of chemistry for their elucidation, render toxicology, in the opinion of all well-informed persons, an essential part of the studies of every medical man.

Were I permitted to detain you much longer, I would ascend higher still, and endeavour to shew how chemical laws obtain during life, and that many of the functions of the living body depend upon them. Does that of digestion receive no elucidation from the principles of this science? The conversion of the farinaceous matter of the stomach into sugar by the saliva, and the neutralization of the acid chymous mass by the redundancy of alkali in the bile, are strongly illustrative.

The formation of blood from chyle, imperfect ere it traverses the lungs, and only becoming perfected in its transit through these glands on account of the action of the air upon it, can only be explained by chemical laws.

The various secretions and excretions of the body; the influence of that wonderful system—the nervous—with the brain as its common centre, and which has been compared to a galvanic pile transmitting at intervals a fluid along the nerves by which the organs of the body are excited into action, and the character of the secretions is determined, are beautiful illustrations of this. Thus, M. Donne has discovered that those glands which are supplied from the cerebro-spinal system pour out an alkaline fluid; those from the ganglionic an acid one; and where a mixture of these exists, we find certain salts formed. The only exception to this rule appears to be the perspiration, which is acid. In these, and in

many other instances, proof is given of the prevalence of chemical laws: yet it must be confessed that the latter are under the control of the inscrutable principle denominated life; or, in other words, they are subservient to the higher laws of vitality.

Thus, gentlemen, have I endeavoured to fulfil my task. Feebly and imperfectly it has been accomplished. The shortness of the time, and the vastness of the subject, presented to me an insurmountable difficulty; and I have, consequently, been compelled cursorily to pass over many points of interest, and to leave others wholly unnoticed. Enough, however, I hope, has been said to prove that many advantages are derivable from an application of the science of chemistry to veterinary medicine. What it may yet effect we know not. Can we confine human knowledge within limits that are impassable? Who dares define them, or attempt the bootless task! "Wisdom," we are told, "is found of those who seek her;" but, like a coy maiden,

> "Conscious of her worth,
> She will be woo'd, and not unsought be won."

And who, to try the tenuity of the spider's web, would rudely tear it? Who, to measure the mathematical correctness of the cells of the honey-bee, would first compress them? or who, admiring the tints on a butterfly's wing, would forcibly brush it?

"The characters of Nature," says Burke, "are legible, it is true; but they are not plain enough to enable those who run to read them. We must make use of a cautious, I had almost said a timorous, method of proceeding. We must not attempt to fly, when we can scarcely pretend to creep. In considering any complex matter, we ought to examine every distinct ingredient in the composition, one by one, and reduce every thing to the utmost simplicity; since the condition of our nature binds us to a strict law and very narrow limits. We ought afterwards to examine the principles of the effect by the composition, as well as the composition by that of the principles. We ought to compare our subject with things of a similar nature, and even with things of a contrary nature; for discoveries may be and often are made by contrast, which would escape us on the single view. The greater number of comparisons we make, the more general and more certain our knowledge is likely to prove, as built upon a more extensive and perfect induction.

"If an inquiry, thus carefully conducted, should fail at last of discovering the truth, it may answer an end perhaps as useful, in discovering to us the weakness of our own understanding. If it does not make us knowing, it may make us modest. If it does not preserve us from error, it may at least from the spirit of error;

and may make us cautious of pronouncing with positiveness or with haste, when so much labour may end in so much uncertainty."

"The truths of natural religion," observes an elegant writer, "gain an accession of evidence from every addition that is made to the stock of human knowledge. Hence, in the case of those individuals who devote themselves with fair and candid minds to the pursuits of science, there is a gradual progress of light and conviction, keeping pace with the enlargement of their information and of their views; and hence a strong presumption that the influence which these truths have, even in the present state of society, on the minds of the multitude, will continually increase, in proportion as the order of the material universe shall be more fully displayed by the discoveries of philosophy, and as the plan of Providence, in the administration of human affairs, shall be more completely unfolded in the future history of our species."

With these quotations, which will not, I feel assured, be considered irrelevant, I close my address; and now it only remains for me to thank you for the kind attention with which you have listened to these somewhat too lengthened remarks, and which I fear are alike unworthy of my subject and your notice. For the defects and omissions which exist in this oration, allow me, in the quaint but honest language of one of the older writers, to request "that they may be forgiven in one who looks upon himself as a frail and fallible man, and is apt enough to have mean conceits of his own performances, and is very ready to be set right, and thankful to be instructed." And if there has been ought said which has savoured too much of freedom, the only apology I offer is in the language of a favourite poet:—

> "Tis liberty alone that gives the flower
> Of fleeting life its lustre and perfume;
> And we are weeds without it. All constraint,
> Except what wisdom lays on evil men,
> Is evil; hurts the faculties, impedes
> Their progress on the road to science; blinds
> The eyesight of discovery; and begets
> In those that suffer it a sordid mind,
> Bestial; a meagre intellect, unfit
> To be the tenant of man's noble form."

One pleasing duty yet remains unperformed, but its performance will be, I am certain, as gratifying to you as it is to myself;—it is to announce, that what you have lost in my attempt this year will be more than compensated for at our next meeting, when, if life and health be spared to him—and we sincerely wish him both—the oration will be delivered by that unwearied friend to veterinary science, Mr. Youatt.

The cordial thanks of the meeting were voted to Mr. Morton for his eloquent and instructive oration, after which the company adjourned to the dining-room. This being the first public meeting since the decease of Professor Coleman and the appointment of the new *régime*, we shall present our readers with rather a full account of the proceedings; but, on future occasions, we shall, perhaps, say little of that which takes place after the conclusion of the oration.

Professor Sewell again occupied the chair.

The usual loyal toasts were drunk with the accustomed honours, after which the Chairman proposed "The College of Physicians."

The Chairman next proposed "The College of Surgeons."

Mr. Erasmus Wilson felt himself highly flattered in representing on such an occasion the general body of surgeons and medical men. The grand and impelling objects of the human and veterinary surgeon were the same,—the alleviation of pain, the removal of disease, and the prolongation of life. The means by which they became qualified for the accomplishment of these noble purposes were the same, and there ought to be, and would exist in every well-constituted mind, a kindly feeling of mutual respect. If he had never before had the pleasure of mingling with the members of the veterinary profession, he should require nothing more to inspire him with sincere respect for its members and their objects than what he had seen and heard that day. He could not but ardently wish that the progress of the sister art might be rapid and triumphant, and all those ends accomplished which had been so eloquently described in the oration which they had that morning heard.

The surgical and medical man had many strongly impelling motives to induce him to become most intimately acquainted with the principles and practice of his profession; and highly gratifying it was, when a life of honour and of usefulness was fortunately prolonged by his exertions, and the dearest charities of life remained unbroken: but there is (said he) a peculiar feeling of duty and of humanity associated with the discharge of your profession. You are not only struggling to remove disease, but that disease which, from inconsiderateness or inhumanity, some of your fellow-men have brought on a valuable and unoffending brute. There is a sentiment of benevolence operating on your minds which renders the successful employment of your talents doubly grateful. I am describing that which you ought to feel, and doubtless have felt many a time. Independent of the interest which the medical man feels in the practice of his profession, there is a sentiment of benevolence which impels the exertions of the veterinary surgeon. I cannot but be happy in calling such men brethren in the science of medicine. If there be a difference in the comparison of the two professions of human and veterinary medicine, it exists in this—that we have received our science from the hands of our forefathers, while you are the creators of yours. Delightful reflection! glorious stimulus to exertion! If there be any so absurd as to whisper that you exercise a profession inferior to ours, let him dwindle into merited insignificance, when you reply, that the Divine Being has not thought it unworthy of himself to create many an animal around you that is occasionally subjected to pain, and that it is not and cannot be unworthy of you to minister to the wants and add to the comforts of these creatures. That which was not unworthy of our Almighty Maker, cannot be unworthy of us.

I was delighted to hear the principles which were advocated this morning, and with which the professors of the veterinary art seem to be generally imbued,—the aspiring spirit which evidently pervades every breast. I rejoiced in the high scientific position which some who have been educated at

the Veterinary College have been enabled rightfully to assume. I need but to point to the distinguished post filled by your excellent President. I would urge the pupil of the same school to tread in the same path that he has so successfully trodden. Let them remember, however, that the post of honour can only be attained by the honest devotion of every faculty to the accumulation of useful knowledge. The objects at which we have a right to aim can only be acquired by assiduity and industry, and by assiduity and industry the student may justly aspire to the highest position. He may aspire to honours and to emoluments far more valuable to him than any which he could have received from those who have gone before him. He will be the founder of his own reputation, and of honours which he will learn to value more than life itself.

If I were to single out any one man as a living proof how surely all this may be attained, I should name Mr. Youatt, than whom I know not a person more highly and justly respected, both in his own profession and in that to which I have the honour to belong. I will tell you an anecdote about him. A gentleman from the north of England, of highly cultivated mind, came to this town to pay a visit to a friend His friend, delighted to see him, exclaimed, "Now, then, I will shew you all that the metropolis contains of interest and curiosity. We will go to the Houses of Lords and Commons, and see the great and noble of our land; you shall see the Court, and our most able and distinguished men." "Thank you, thank you," said the gentleman from the country; "but there is one sight that I value far above any that you have named—one for which alone I would most willingly have made this journey—and one that would be to me the greatest gratification that I could wish to enjoy. Can you shew me YOUATT?"

This is no fiction, gentlemen. It was a well-deserved tribute of respect to a man whom we must all honour, and whose name is written in gold upon the tablets of your rising science. I have never related this before; but on the present occasion I feel bound to hand over to you an anecdote that belongs to your profession—that you will receive with delight—and that must be a banner of emulation to many around me, and to all who pursue with assiduity the honours of your profession.

The path to deserved estimation is as open to each of you, not only among your own brethren, but the members of the sister science and the community at large. It is open to each and all of you; but remember there is but one path that will conduct to it,—that of industry and honourable conduct. Among other motives to induce you to pursue it, cultivate a benevolent feeling towards the inferior creation. It was the moving principle with him to whom I have alluded; and it will best distinguish the truly noble mind from that which is depraved and unworthy. I would fain impress this strongly on the minds of those who are rising in a profession that has been too much undervalued, but is now rapidly becoming more and more closely identified with the cause of science and humanity. In the name of my professional brethren I beg to return my cordial thanks for the honour which you have conferred upon us.

Professor Sewell then proposed, and to be drunk in silence, "The Memory of Professor Coleman." He had during nearly half a century presided over the interests of the veterinary profession, and they owed him much gratitude. They had often met him at assemblies like this, and a shade passed over their minds when they beheld the place which he had so long occupied filled by another. He would propose, upstanding, but in silence, "His Memory." It would not soon pass away.

Mr. Turner begged to be permitted to propose a toast, and, if the gentlemen around were aware of the name of him whose health he was about to

give, they would fill their glasses to the brim. If they ever drank a bumper, they would do so now. He felt assured that he should break down in the attempted execution of the task which he had undertaken; and when he saw so many able speakers around him, he could not but regret that the toast which stood next on the list had fallen to his l t. He should not, however, break down through want of the deepest feeling with regard to the onward progress of the veterinary art, nor through want of veneration for him who now presided over the destinies of the profession, and whom he, from his very childhood, had had the pleasure of knowing and estimating as he deserved.

The present was a new era in veterinary science. Our former lamented Professor had been taken from us, but it was pleasing to reflect, that we had found so able a successor as the gentleman who presided at that meeting. In every respect, however, Professor Coleman was not lost to us, nor did we cease to lie under still increasing obligation to him. Our present Professor commenced his career as apprentice to that talented individual. He imbibed some of his opinions; he was rightly trained by him, and formed to become an able practical man. The former Professor was in many respects a pattern of a practitioner. While he lived he was always on the alert; and when he died, he died with harness on his back. He did not, however, leave us until the gentleman who is now placed at the head of the veterinary institution was fully competent to secure the progress of our art and the best interests of our profession.

He had been a close observer of Professor Sewell, and had admired his unwearied industry for more than thirty years; and, setting aside for a moment his brilliant discoveries, he knew not where a person was to be found more deserving of our respect as a man and a gentleman. Had he a son, he should be proud to direct his attention to the career of Mr. Sewell as an example for him to follow, since he had been, from first to last, such a thorough man of business. They knew his professional merits better than he had the power to describe them. To Mr. Coleman he yielded the merit of having brought into proper form and order the institution, to the management of which Sainbel was not equal. Mr. Coleman shall be acknowledged to have first consolidated the plan; but who superintended the working of the machine? On whom lay all the burden? How was it that Mr. Sewell obtained the respect and good-will of the whole body of subscribers? How was it that, whoever came to the College, Mr. Sewell was the person inquired for?—Not because he had made this or the other discovery—not because he was the strenuous advocate of this or the other speculative opinion, but because he was always at his post—because, if a lame horse was brought to him, he would instantly discover the seat and the nature of the lameness—because the slightest imperfection or deviation from the natural form rarely or never escaped his observation. He had now met with his reward in the post which he was called upon to fill, and the new duties which he had to discharge. He gloried in it, and hoped that he would live many a year to enjoy the honours and emoluments of his situation.

He would not long intrude upon them, but he had not quite done his say. He must allude to the new and extended scale on which the veterinary art would, in future, be studied and practised. If improvement can be effected in any point or any degree, no one would take a warmer interest in the progress of that which from his very infancy had been dear to him; but he should be sorry to see things hurried too rapidly. Time, perhaps a considerable time, must be allowed to the officers of the institution to accomplish their purpose, and they cannot at once satisfy every body.

One thing more he would offer to their consideration. Much had been said of the past state and future prospects of the veterinary profession—much had

been written and said of the slow march of improvement among us; and complaints had been made that we were not progressing as we ought. Now, he did not altogether think that this was quite right. The institution had not existed half a century, and yet how considerable and how valuable had been the improvement—how much sterling good had been effected! In his opinion, if in the next half century the veterinary art should make as much progress as in that which has passed, there would be little cause for complaint. If they, or either of them, who had hitherto been placed at the head of the College had made any false step—if they had not been good goers and good workers, the Veterinary College would not have been in existence: but he is now proud of the high ground on which it stands. He begged to propose the health of the new Professor, "Mr. Sewell, and long life to him."

Mr. Sewell.—Much that has been said by my friend on my left, Mr. Turner, in the proposal of my health, so warmly received by you, must be attributed to those feelings which are known to actuate him in all he does. There is a sincerity and an earnestness about him which render him esteemed by all who know him. He was a house-pupil of mine for two seasons, and during that time I had an opportunity of becoming intimately acquainted with him. Since then he has moved in the stirring scenes of life with honour, and, I trust, with profit to himself, for he is always at his post; and, without any hesitation, I can point to him as an example for you to follow.

All are not, it is true, endowed with the like abilities, nor are circumstances always favourable for the exercise of those we possess; yet each has to fill up an allotted sphere, each to discharge the duties of some station; and, although all cannot arrive at the highest post, yet all may strive to obtain it.

I confess that I have now attained the summit of my ambitious hopes; and I trust that health will be granted, so that I may be enabled, for yet some time to come, to perform the duties of my office to your satisfaction.

In the changes which, of necessity, have taken place since the death of your esteemed Professor, with whom I co-operated for the long period of forty years, there may have been some of which you disapprove; others, I hope, equally merit your approval. There is one I will advert to,—the appointment of Mr. Spooner. I had told the Governors that it was essential that an efficient person should be chosen; for the office is one of great responsibility. They were pleased to place confidence in me, and I selected him. I had known his private worth. He had been long tried as a professional man and a teacher, and he had given the best of all proofs of his abilities.

They were pleased to approve my selection; and I know it is approved of by you. May he live many years to fulfil the duties of the trust reposed in him, and, when I leave, may he be the man of your choice to supply my place!

A happy and a new idea has been given us by Professor Wilson, whose remarks we have listened to with so much pleasure, and which we shall do well to remember. By associations such as these we cannot fail to be benefitted. He says we have had to create a profession! Turner's half century has not yet expired. It is now about forty-five years since that the foundation of the College was laid. Its commencement was marked with the vicissitudes usually attendant on new institutions. There was much to contend against, and many difficulties to combat—the prejudices to overcome were not few, and there was an obstinate clinging to old customs, while the expenses were necessarily great. For some time we received aid from parliament—that enlightened statesman, Mr. Pitt, being then at the head of the administration, and he took a very warm interest in the infant science. For these twenty years past, however, we have needed no assistance; and we have now a fund ample to meet any emergency.

The science of veterinary medicine cannot fail as long as it is supported by

such as I have the gratification to see around me; nor have we any cause to fear the loss of the support of a discerning and an enlightened public. It is true that, in the arrangements which have recently been entered into, an almost new and untrodden field will be trodden by us; but we will exert our best energies: and, although at first we may not accomplish every thing that we and others may anticipate, yet, by industry, we hope to be enabled to surmount any and every obstacle, and thus disappoint not the expectations which may have been raised by our friends.

Mr. Youatt congratulated himself that at the first convivial but important meeting of the Association, since a new and glorious day had begun to dawn upon us, it fell to his lot to propose a toast that would be received with universal acclamation. He had called this an important meeting. It would connect more closely together those who had at heart the interests of the veterinary profession; and it would enable us to guess, somewhat shrewdly, at the character which the art to which we were devoted was about to assume. We should trace, though possibly somewhat dimly, the character of forthcoming events.

His friend Mr. Turner had taken a retrospective view of veterinary science, and had congratulated himself that in the space of one half century it had made such decided progress. Not one word should drop from him which could give rise to unpleasant feeling or to useless controversy; but he must acknowledge that he could not join in the congratulations which gave so much pleasure to his friend. Veterinary science had progressed, because every one had been forced onward by the increasing diffusion of knowledge; but it had not advanced in proportion to its importance. It had only moved onward in its career because there was no power that could arrest its course. That portion of improvement which had been effected was chiefly the work of individuals, rarely countenanced, and too often opposed by the powers that were.

If it should make equal progress in the next fifty years, his friend would be content. So would not he. He regarded the present as a new era in our profession. The course of instruction would be strangely, gloriously extended—the zeal and the labours of the professors would be correspondingly increased, and our art would be worthy of its object, and rise to the high consideration which it has a right to claim. He perfectly agreed with Mr. Turner, that it must be the work of time to arrange and to carry into execution the new and noble objects which our art was originally intended to accomplish, and which it now assuredly would accomplish. There were difficulties to overcome, and clashing interests to combine, and inveterate prejudices to banish. All that the profession now required was a warm expression of zeal in the glorious cause—arrangements which must necessarily lead to the consummation devoutly to be wished, and the evident tendency of every act to hasten the happy conclusion as soon as it can be effected. Then, not only will the members of the profession patiently wait, but they will unite in opposing every party attack, and endeavour, by their own individual exertion, to aid the labours of the professors, and to hasten the happy result. Such he believed to be the state of feeling every heart disposed to conciliation and forbearance, but determined ultimately to effect the glorious triumph which we fondly anticipated.

And now, Sir,—said he—to my toast, to which others might have done more justice, but they could not have felt a deeper interest than I do in the subject which it embraces, and the welfare of the man who will have to work out that which is at length acknowledged to be not merely a part and portion of veterinary study, but the most important object to which the attention of the pupil can be directed. Ay! we have recurred at length to the olden days, when the veterinary profession was rightly understood, and the veterinary

practitioner duly estimated; when every quadruped, and every creature that had been enslaved or domesticated, was the legitimate object of medical care.

And what are the bases on which the knowledge of the veterinary surgeon must be grounded? What course of study must he now pursue, in order to be enabled fully and honourably to discharge his duty? That which is most important of all, and without which his pretensions will melt into air, thin air, is a knowledge of anatomy—comparative anatomy—once proscribed, now hallowed term! Comparative anatomy—a knowledge of the structure of every patient.

I will not, at this day, insult you with any laboured explication of the value of this branch of your studies. It is essential that you should perfectly understand the structure of the animal the curative treatment of which you profess to undertake. A general knowledge of the formation of every important organ—the seat and the action of every muscle, the course of every artery and vein, and the ramifications of every nerve. Many a case of a medical and a surgical character will occur in your practice, when the advantage of knowing every point of the geography of the regions over which your fingers and your instruments must travel will be most painfully or pleasantly evident to you.

You may be rash in many of the operations which you undertake. Good fortune may for awhile enable you to blunder through many a difficulty; but let me tell you, that without an accurate knowledge of the structure, and situation, and relations, and dependencies of every organ of consequence—I was going to say, of every organ the most minute—your ignorance will be ultimately exposed, and you will be despised by every thinking man. It is true, that the student in after-life may forget many of the minutiæ of anatomical structure; but enlarged and correct conceptions of the situation and structure and functions of the various organs will be indelibly engraven on his memory. Some parts of the picture may wear away; but the grand outline will never be effaced; and a few moments only of self-communing, or of reference to the chart, will make him equal to all that can be required of him.

A knowledge of the anatomy of the various parts will lead to, will be inseparable from, a clear conception of their function. An organ is constructed so as to perform a certain action—to accomplish a certain purpose. You cannot understand the action until you are perfectly master of the structure; and well understanding the structure, you will rarely mistake the character of the function. In health this is highly important. But the essence of your profession is the treatment of disease, and that disease is accompanied by alteration of structure and of function. How important to detect these variations from nature—to find at once the usurped residence of the foe—to ascertain precisely the ravages which have been committed—to arrest the progress of mischief—and to restore to pristine health! All these things are connected with a deep knowledge of anatomy and physiology; and without that knowledge you will be utterly incapable of scientific and successful practice.

And why all this?—because I was tracing in my mind's eye the capability of our newly-appointed Assistant-Professor—the Professor of Anatomy and Physiology,—of comparative anatomy and physiology, so far as our now numerous classes of patients extend. I was tracing in my mind's eye his accurate knowledge of the anatomical structure of all our domesticated animals; his happy tact of connecting the function with the structure, and apparently without effort—giving a simple, clear, satisfactory, useful, beautiful conception of the design and admirable working of every part. I have a right to speak of that gentleman, for I once had the honour to call him my pupil: and I know not in our profession—I do not believe that there exists—a more lucid and accurate demonstrator of the anatomy of our domesticated animals. I am equally sure that there does not exist the man whose heart is more

thoroughly in his work; or from whose combined talent and zeal greater advantage to the veterinary student could possibly be obtained. I beg leave to propose, in bumpers, "The health of Assistant-Professor Spooner."

Mr. Spooner.—The honour conferred upon me by having my health proposed by one whom I and you so highly esteem, and the manner in which you have answered his call, believe me I duly estimate; but suitably to respond to the very eloquent speech which you have just heard is a task to which I feel unequal. I beg, therefore, that you will be pleased to accept my heartfelt thanks. Much that Mr. Youatt has said of me I fear that I am undeserving of; yet I trust that I have a deep feeling of the nature and responsibility of the appointment I have the honour to fill, and of the importance of those branches of veterinary science which it will be my duty to teach; and I shall ever be most anxious that the benefits which our profession has the power to bestow shall be extended to every animal that is capable of suffering.

It is true, that I have hitherto directed my particular attention to the anatomy and physiology of the horse, that animal having, up to this period, almost exclusively obtained the care and study of the professors of this institution; but I promise that, in future, my inquiries shall have a wider scope, and shall be bounded only by the legitimate objects of our care.

For awhile I fear not that I shall experience the kind consideration of my friends; and, ultimately, I trust that I shall be better able to discharge every portion of my duty with satisfaction to my pupils and credit to myself, and advantage to the profession to which I have the honour to belong.

Mr. Ernes felt himself much honoured in having to propose the next toast. It was "The English Agricultural Society." That society was as yet in its mere infancy; but it had begun to exhibit its power and its worth. It was already the admiration of the continent, and it would soon be the just pride of that country whose horses and cattle and sheep were admired and unrivalled in every part of the world. It is already beginning to effect the most important changes. Our profession begins to feel its noble renovating power. It is extending the benefits which it has the power to bestow to the domesticated animals of every class; and the time is now approaching when the union between the agriculturist and the veterinary practitioner will become indissoluble, and the sister sciences will progress hand in hand. On almost every part of the continent they are taught under the same roof: not that agriculture will usually be practised by the veterinary surgeon, but he will be enabled to render more valuable assistance to the agrinomes among whom he may be placed.

The Chairman begged to propose a toast, in which he felt assured every gentleman present would cordially join—"Veterinary Schools everywhere." Only a little more than seventy years had passed since the establishment of the first school in Europe; and now there was scarcely a state in which they were not found. They had even spread, but more thinly scattered, to Asia, to America, and even to Africa. Wherever they were found, they were, generally speaking, well conducted, and they rendered essential service to the country generally, and particularly to the agriculturist. Of that established in the neighbourhood of the metropolis of Great Britain he, from his connexion with it, must only say that it was now striving to do well, and to answer the purpose for which it was founded. Of the veterinary school in Scotland he might without impropriety speak in the highest terms of commendation. He rejoiced to see it prosper.

He had the pleasure of seeing among them this evening the author of an excellent Essay on a late Epidemic among Horses. That gentleman was not a professor in any school; but he was in the habit of delivering, in the Scientific Institution of the town in which he lived, some excellent lectures on

subjects connected with and illustrative of the principles of our profession. He was most happy to see him that evening. His name might, without any impropriety, be classed with that of the Professors of the schools. He would propose "The health of Mr. Spooner, of Southampton, and of the liberal and honest professors of the veterinary art everywhere."

Mr. W. C. Spooner knew not what possible claim he had to be ranked with those talented and honourable names to which the toast had reference, and who were worthy of all respect and gratitude. He attributed it more to the private kindly feeling of the Professor than to any merit of his. He belonged not, as a lecturer, to any school; and if he ventured, in the institution to which the Professor had alluded, to elucidate some point of physiological science, he was chiefly proud of any little approbation it received, on account of the honour which it reflected on the profession to which he belonged. In ardent love for that profession he would yield to no one. His heart was with it, and he gloried in perceiving that it was now likely to assume its proper ground among the scientific institutions of the country. He came seventy miles in order to be present at this first assembly of his brethren under the newly constituted order of things; and, if he were to say that he felt gratified at the result of his journey, such a confession would very feebly express his feelings of delight and satisfaction. The excellent lecture which had been delivered in the morning—the splendid oration of our friend Morton—and the happy and joyous meeting around this festive board—it was worth travelling some thousand miles to enjoy a gratification like this. It would be long ere the recollection of it would wear away; and we should feel more kindly disposed towards each other, and more zealous in that cause under which we were now arranging ourselves. The harmony and happiness which now prevailed among them were in keeping with that new era which was dawning upon our profession. If he might be allowed to express himself in the beautiful language of the poet, he would say

> "Long, long be our hearts with its memories fill'd,
> Like a vase in which roses have once been distill'd:
> You may break, you may ruin the vase if you will,
> But the scent of the roses will hang round it still."

So, likewise, shall we, gentlemen; although, like the broken fragments of the vase, we may be scattered among our private localities, and engaged in other pursuits, yet the recollection of this joyous meeting will ever be preserved in our hearts—will cease only to be remembered when we ourselves cease to endure. A new era is dawning on our profession. Let us rightly consider the impression which this should make upon us, and the course of conduct we should adopt. Amid our satisfaction at the scene which is opening to our view, let us remember the correspondent duties which devolve upon us. We must advance with the improvement of our art, or those who are following closely upon us will trample us under foot. The arts and sciences of the present day are making the most rapid progress. Ours will progress among the rest. Let none of us be found laggards, much less traitors, when every thing around us is improving. If we contrast the present day with former times, we shall find that, then, if a new fact was discovered in science, it was confined to the monastic cell or philosopher's study that witnessed its birth, or was, at best, limited to the learned few; whilst now, no sooner does a new feature dawn upon the horizon of science, than its light is immediately dispensed to all who choose to see it. It spreads, indeed, like the atmosphere we breathe—like it, too, imparting its beneficial influence to all around. For us, therefore, to be still, when all around us are progressing; for us alone to despise, or to be destitute of the light of science, would be a disgrace beyond redemption. True, we

have, at the present day, but few of those brilliant meteors which appeared amid the dark firmament of antiquity, dazzling the world by their brilliancy, and imparting a portion of their light even to the present day: yet we must bear in mind, that much of this brilliancy was owing to the darkness that surrounded them, just as the forked lightning seems most vivid in the darkest sky. Although at the present day we have but few of these blazing meteors, yet we have the satisfaction of perceiving that knowledge and science are so generally diffused, that the whole firmament of our literary world presents, at every aspect, such a galaxy of constellations that, although our eyes are not dazzled, our understandings are enlightened, and he who runs may read.

As it fares with the light of science generally, so it is with our profession. We must advance, and, God willing, we will advance. I congratulate the pupils of the present day on the advantages which they will possess over those of even a few years ago,—over those even of my time. Yet the Professors will not forget their old pupils. They will suffer some rays of the light which is now diverging around to reach the comparatively half-taught pupil of former times. They will suffer the knowledge of some important facts to irradiate our minds. We shall look to them for this through the medium of our periodical, and through the medium of their own publication. They will feel that there is a principle of justice and of fair play, and they will stand by those who once stood by them.

Still having the scientific, the beautiful, the kind speech of Mr. Wilson ringing in my ears, I would here beg to offer my respectful and warmest thanks, in the name of all my brethren, for the assistance and support which the practitioner who tries to deserve it uniformly receives from the surgeon. This is an union which must never be broken. The extended education of the veterinary pupil will attract more kindness and friendship from the professor of human medicine.

With regard to the eminent teachers alluded to, he was confident that there was a greater spirit of liberality, and of high and honourable estimation of each other, springing up among them. It would be a kind of republic of veterinary science, to which all would be expected to contribute, and from which all would derive advantage.

Mr. Braby proposed the health of "Veterinary Authors." Great were the advantages which were derived from talented and communicative friends. Still greater, perhaps, from the lectures of those who had deeply thought on the subjects which they professed to teach, and who had the happy but rare art of simply and graphically illustrating the grand truths of medicine. More valuable, however, was the information derived from the author who had spent many a studious hour in pondering over the various branches of our art; for he could, to a great degree at least, secure himself from the promulgation of error, while his class was composed of thousands, and his theatre was the versal world. He would not detain them by a list of those in our own or in foreign countries to whom we were deeply indebted for their discoveries or their elucidations. He would merely look around the table. There was Mr. Turner!—he could scarcely excuse the youngest student who had not read with pleasure and improvement Mr. Turner's works on the foot of the horse, on the unilateral shoe, and his late physiological work, which threatens to make some of the advocates of the new doctrines respecting the blood to pause at least, if not to recant. Mr. Morton's excellent work on veterinary pharmacy had been long wanted, and it would be considered by the pupil as one of the choicest treasures of his library. To Mr. W. C. Spooner, of Southampton, we are under much obligation for the simple, concise history which he has given of the epidemic of 1836. There was another gentleman to whom no feeble language of his could do justice;—he referred to the Editor of The Veterinarian, whose valuable and all-comprehensive and most im-

partial journal was duly estimated by every member of the profession, and who had crowned all his previous works by his calm, but philosophical and eloquent and unanswerable, plea for "Humanity to Brutes." Did he wander from this room, he could not fail to enumerate a Percivall, a Blaine, a Clark, a Goodwin, a Stewart, and many others of whom any profession might be proud: but he would content himself with this little catalogue, and they would respond to his toast,—"Veterinary Authors."

Mr. W. C. Spooner.—My friend Morton promised me just now that he would let me in for a good thing; but I little dreamed how literally he meant to keep his word. Why I should be selected to return thanks for a toast like this I know not, unless it be to carry out a principle adopted in public schools, of making the juniors fags for the older members. If the fact of being one of the humblest and most unworthy of veterinary authors will give me a title to the honour, I will freely lay claim to it. There is, however, an advantage attending even this, for it enables me to say of others what I could never think of saying for myself; it places me in the proud position of returning thanks for a compliment, great and honourable as it is, yet not greater or more honourable than deserved.

But, although I will cheerfully surrender to my fellow authors the palm of superior talent and greater excellency, yet to none of them will I yield in ardent love for my profession, and earnest zeal for its onward progress. The names which have been mentioned, myself excepted, do honour to our profession, and would reflect credit on any other, no matter how exalted it may be. To allude only to those of comparatively modern days: Blaine, one of the earliest in the field, whose works were so valuable when we had so few, and whose office it seemed to be to remove the difficulties which would have obstructed the progress or arrested the path of others. Percivall, eloquent, yet erudite—simple, yet profound, whose correct and classic style so beautifully elevates the subject on which he writes. Youatt, a leviathan of literature, whose works form a library by themselves, the magnitude of which almost disheartens humble writers, like myself—whose books are in every one's possession, and by every one perused and valued. Is it necessary to mention the Horse, Cattle, Sheep—each one surpassing the former in excellency; and last, not least (for I will not speak of him as Editor of The Veterinarian, a work so honourably mentioned by our Professor, in his lecture this morning), his Essay on Humanity; a labour which he seems to regard but as a toy, but which we consider as one most creditable to the author and honourable to the profession which his labours serve to adorn.

There are many names which I must pass over; but you would not excuse me if I were to omit one which is rapidly becoming more and more dear to the profession;—I mean that of the gentleman who fills the laborious office of Secretary to this Association, and who is so successfully and so nobly obliterating the disgraceful chasm which had too long existed in the education of the veterinary pupil. Anatomy, physiology, and pathology, were most important studies, and ampler justice would now be done to them than any former period had witnessed: but a knowledge of the nature and composition and powers of the various pharmaceutical agents,—the manner in which they might be best prepared and combined, and the relation of them all to that noble science, whose influence, whose general agency, and whose sublimity, had been so ably expounded this morning,—this was a task left for my friend Morton to undertake and to accomplish. Side by side with, and scarcely inferior to those noble works to which I have alluded, will stand his "Veterinary Pharmacy."

In their names, for it is to them that you look, and of them that you are justly proud, I beg leave to thank you.

Mr. Simonds said, that the task had devolved upon him—and a pleasing one it was—of proposing the health of a gentleman whom he was proud to call his friend. He was one of the brightest ornaments of the veterinary profession; and to this was joined a kindness of heart and a singleness of purpose which endeared him to all who had the honour of being intimately acquainted with him. Scarcely a person had addressed them that evening who had not alluded to his talent, his diligence, his straightforwardness, and his devotion to his profession. In fact, there was little left for him to say, and little was required. He proposed "The health of Mr. Youatt,—long life and prosperity to him."

Mr. Youatt.—The kindness which I have lately experienced from the profession of which I am an humble member is that on which I had never the vanity to calculate. I had not the shadow of right to do so. It often seems to me like a dream; and yet from slumbers like these I would not awake. I thank my friends, on both sides of me, for what they have kindly and flatteringly said. There is one thing, however, which they, and all whom I value, shall have to plead in behalf of their delusion, that my heart was ever and honestly devoted to the triumph of veterinary science—that to the promotion of its honour, and its onward progress, my earliest, and latest, and most anxious thoughts have been uniformly directed—and that, when I throw off this mortal coil, my most implacable enemy shall not have to say, that in the minutest point I was ever faithless to the cause I professed to serve. Gentlemen, I thank you.

Mr. Curtis begged to be permitted to propose a toast: he was assured that it would be received with enthusiasm. It was "The Veterinary Medical Association, and the Council by whom its proceedings were so admirably conducted." He was highly gratified to see such a body of men congregated together to celebrate the anniversary of this institution, and the happy changes which were taking place in the arrangements of the College. There were two engines, powerful and honourable ones, employed in the cause of the Association, the cause of true science, without the assistance of which the talents of the individual members, in writing and speaking, would be nearly valueless—the judicious management of its affairs, and a faithful report of its proceedings. The first, he was happy to say, was ably conducted by the present Council; the second, by the Editor of The Veterinarian, in whose praise so much had already been said, that an attempt on his part to make an addition would be like repeating a twice-told tale, which, however interesting, would be sure to fatigue the hearers.

He rejoiced to see the rapid progress of veterinary science, not only on account of the veterinary surgeon, but because it would throw much valuable light on many disputed and important points of human medicine. It was the rule with practitioners of human medicine to keep their patients alive as long as possible; so that, in making post-mortem examinations, they seldom had an opportunity of seeing the morbid appearances until the disease had proceeded far enough to kill the patient; while the patients of the veterinary surgeon were commonly destroyed as soon as they became unserviceable; so that the veterinary practitioner saw morbid appearances in all their stages. Besides which, the opportunities he had of making experiments enabled him to throw light on many points of physiology which must otherwise remain in the dark.

On these accounts he wished to see a free and unreserved communication between the practitioners of human and veterinary medicine. Such a communication he was sure would be very serviceable to both. In former days, in this country particularly, veterinary medicine was at so low an ebb, that it hardly deserved the name of a science, and it would scarcely have excited surprise that its professors were despised; but, in the present day, when the acquirements

of veterinary surgeons were required to reach so high a standard, he could see no reason why the most unreserved communication should not take place.

He begged to conclude by proposing the health of "The Veterinary Medical Association, particularly its Council."

The Chairman, in the name of every member of the profession, begged to return his cordial thanks for these expressions of kindness. It would be the pride of the veterinarian to stand high in the estimation of his elder brethren of the medical profession.

Mr. Daws next rose. The toast, said he, which I am about to propose is one that I feel perfectly convinced you will drink with the greatest enthusiasm.

It is the health of an individual to whom we must all feel ourselves greatly indebted for the interest which he takes in the regulation and management of the affairs of the Veterinary Medical Association.

I have known him many years, and the longer I know him the better I like him. His restless spirit is for ever eagerly employed in forwarding the objects of this Association; and I have always found him ready and willing to impart that information to all around him which he had acquired in many an hour of persevering study that should have been dedicated to repose. I will no longer keep you in suspense, for the gentleman to whom I allude is no other than "Mr. Morton, our worthy Secretary and Lecturer on Veterinary Materia Medica, &c., at the Royal Veterinary College." Long may he live to fulfil the onerous duties of his situation with satisfaction to himself and all around him!"

Mr. Morton.—Well has the poet said,

> The rose is not without its power
> When churlishness in anger throws it;
> But oh! how doubly sweet the flower
> When friendship with a smile bestows it.

These repetitions of your kindness are, I trust, appreciated by me, and will prove incentives if not to increased at least to continued exertions in your good cause. I am ready to acknowledge that I feel an interest in the prosperity of the Association whose anniversary we are this day met to celebrate; while I stand before you not a creature of to-day, or of yesterday, for I was with the institution at its birth, and have watched with a degree of exultation its onward progress. It is now, I think, firmly fixed in the estimation of the profession as a body, and esteemed for its usefulness; and all that it requires to continue in health and vigour is, a cordial co-operation among its constituents. This, I doubt not, it will obtain.

You have been pleased to couple with my health as your Secretary a recognition of me as a Lecturer on Veterinary Materia Medica and Pharmacy, for which I thank you. These important and valuable divisions of science, it is true, I have made my study during the periods unoccupied by the duties of my public office. It is but little that I have learned, and only as a private teacher have I ventured to appear before you; and yet I have the pleasing satisfaction of knowing, that there are friends on my right and on my left, who hesitate not to say that they have derived some benefit from my instructions. The merit is their own. It is the fruit of their own industry—the result of their application and study; and I trust that those who are about to enter upon their studies will take them as ensamples.

I could not help reflecting, while delivering my oration, that nearly half a century had been allowed to pass away before the science, the advantages derivable from which I was feebly endeavouring to point out, was deemed worthy of a place in your alma mater. More correct views, however, are now

entertained, and we rejoice at it. Whether or not I am to be the person appointed to the honourable situation of Lecturer on the subjects adverted to I cannot tell. I could have wished that ere this it had been settled. Some delay has taken place—necessarily it may have been—and yet I think I have cause to complain; but this is a subject I dare not trust myself to speak upon. Those who know me, know that, at times, I, perhaps imprudently, too freely to my thoughts add words, and I have long said that, although I may live and die poor, it shall also be independent. Again I thank you for the honours you have conferred upon me.

The Chairman had now a toast to propose, the announcement of which they would all receive with pleasure, "The Successful Competitors for the Prize Medal and Certificates of Merit." He had hoped that there would have been more candidates for the former; but, although the knight who did enter the field had no opponent, he was fully worthy of the honours which he received. May he live long to wear them! He congratulated those on whom certificates of merit had been bestowed. These were the first steps in the road to honour. He would urge them to persevere. It was pleasing to behold the first efforts of those by whom the honour of the profession was to be afterwards sustained; and he trusted that, on every succeeding year, there would be a more numerous and more distinguished phalanx of rivals for the prize.

Mr. F. J. Sewell begged to return his own thanks, and those of the successful candidates for the certificates of merit, for the honour which had been conferred upon them, and for the kind expressions of the Chairman and the cheering plaudits of the gentlemen around. The essays were numerous, the subjects various, and the discussion on them interesting. If they gave any pleasure to their elder brethren—if they encouraged the hope, that the reputation of the profession might hereafter be better sustained by those who were now breaking their first lance, they were truly proud, and they would struggle hard not to disappoint the expectations of their friends.

The Chairman next proposed "The healths of the visitors." It was always gratifying to be favoured with the company of the friends of our professional brethren, especially medical men, as it shewed the friendly interest which they take in our pursuits; and as they form a portion of the public, we consider their opinions expressive of the popular feeling towards us.

Mr. Wilkinson said that he had been present at several of these anniversary dinners, and they had usually been pleasant as well as instructive; but he had never experienced so much delight as on this occasion. One spirit of good and kindly feeling seemed to actuate every individual, and he drew from it the happiest presages with regard to the future progress and welfare of the institution. He felt the more interest in this from the connexion which existed between him and the worthy President; and he was pleased to see how the cause of science and that of humanity were blended together, and equally progressing. He was assured that he spoke the sentiments of those gentlemen who, like himself, were permitted to share in the pleasures of this day; and other friends of the cause, in our native country, and in every part of the world, would rejoice in the prosperity of this institution and the triumph of veterinary science.

The Chairman next proposed "The Students." It is (said he) exceedingly gratifying to see so many students among us; it shews that a good spirit prevails. They are anxious to emulate their seniors; and there are many among us that may be looked up to as examples. They may all acquire professional eminence by a proper exercise of their talents and industry. All cannot attain the highest post; but each, in his own circle of practice, may, by his conduct, become eminent and respected. Integrity of purpose, and a determination to be fair and honourable in all the transactions of life, will ensure you the best

rewards. May success attend your studies, and health and prosperity your future lives!

Mr. Howell.—Mr. President and Gentlemen, allow me, on behalf of myself and fellow-students, to return you our most sincere thanks for the kind manner in which you have proposed and drunk our healths. Although but young aspirants in the profession in which you occupy, and that justly, so high a station, yet I trust I may without presumption say that we are not less anxious for the honour and prosperity of it than you are. We have been told to-day, that a new era has dawned upon us, and that we possess advantages which you did not. Our endeavours shall be to profit by them; and, although all of us may not, cannot obtain the honours you enjoy, still we hope to pass through life with credit to ourselves, to you, and the profession of which we are desirous of becoming members.

"The health of the Stewards," was next proposed. I have (said the Chairman) the pleasing duty to perform, on behalf of this numerous company, of returning thanks to those gentlemen who have so kindly taken upon themselves the management of this Festival, and which has never been surpassed in the very many that I have had the pleasure of partaking of in this house. We cordially wish them health and prosperity, and hope to have the pleasure of their company at the next Anniversary.

Mr. Ernes rose to return thanks for the very kind manner in which the health of the Stewards had been drunk. They had endeavoured to fulfil the duties which devolved upon them, and thereby to render themselves, in some degree, worthy of the honour conferred. It was pleasing to hear that their exertions had been approved of by the President and members of the Association; and he begged that they would receive his own sincere thanks, and those of his fellow-officers, for the honour that had been conferred on them.

Mr. Turner said, that neither gallantry nor good feeling would suffer them to part before another toast had been drunk. It was the health of a lady who felt as deeply interested as any of them in the welfare of the veterinary profession; not only because it was the profession of her lord, but because its aim and its object was the relief of the sufferings of our domesticated animals. He had heard her express herself most warmly on this subject, and he delighted to hear such sentiments expressed. He would propose "The health of Mrs. Sewell."

The Chairman replied. In proposing the health of my far better half, my old friend Turner has rather stepped out of the line; but I forgive him, for I know that he was actuated by the kindest feelings, and I know, too, that the subject of his toast feels most deeply interested in the humane exercise of your professional talents. I know that her good wishes follow you in every attempt you make to relieve the sufferings of your patients, and especially when those sufferings have been produced by the folly or the inhumanity of those who ought to be their protectors. In her name I kindly thank you; and, in her name and my own, I wish you all health and prosperity.

TUESDAY, NOVEMBER 19, 1839.

THE Association met in the Theatre of the Royal Veterinary College. The Rules, &c., of the Association having been read, the death of the late Patron, Professor Coleman, was adverted to, and Professor Sewell unanimously, and by acclamation, elected in his place.

The following officers were also chosen for the Session:—

President.—Assistant-Professor Spooner.

Vice-Presidents.

Mr. A. Henderson	Mr. J. Bowles
— J. Turner	— R. N. Clarkson
— J. Field	— J. Howell
— J. B. Simonds	— A. Bottle
— H. Daws	— G. Page
— E. Higgs	— J. C. Plomley

Treasurer.—Mr. W. Youatt.

Librarian.—Mr. W. W. Barth.

Secretary.—Mr. W. J. T. Morton.

There were laid upon the table thirty volumes of books, principally by the older authors on the veterinary art, in Latin, Italian, French, and English, and presented to the library by the Governors of the College. Also,

"Duncan's Edinburgh Dispensatory;"
"Forsyth's Medical and Surgical Dictionary;"
"Pollock's London Pharmacopœia;"
"Lee's Chemical Diagrams;" and
"Blacklock on Sheep," presented by Mr. H.W. Sparrow, V.S.

Two copies of "Consumption, why so Fatal?" from the author, Mr. J. Tyrrell, V.S.

A copy of the second edition of his "Manual of Veterinary Pharmacy," and his paper on the "Diniodide of Copper," by the Secretary.

The Secretary reported that, since the last meeting of the Association, Certificates of Fellowship had been awarded to Mr. H. W. Sparrow and Mr. R. Jones; and of Membership to Messrs. Archer, Sparrow, G. Higgs, Moon, Jones, M. M. Lucas, and J. Wright.

The following were elected as Honorary Associates:—

Professor Delwart, Veterinary School, Brussels.
——— Theirnesse, ditto ditto.

As Members:

Mr. C. Jackson, V. S., Hon. E. I. Company's Service
— G. Draper, V. S., Melbourne
— C. Morgan, Student
— E. S. Grey, do.
— Tho. Baldwin, do.
— W. Surmon, do.
— G. Cooke, do.
— R. Heffer, do.
Mr. W. Litt, Student
— T. Branscombe, do.
— J. Cooper, do.
— R. Whitwell, do.
— E. Sansom, do.
— C. Wills, do.
— J. Rolfe, do.
— W. Sayer, do.
— W. Ellis, do.
— J. Fryer, do.

TUESDAY, NOVEMBER 26, 1839.

The PATRON and PRESIDENT personally acknowledged their election to office.

There were laid upon the table, a needle, invented by Mr. J. B. SIMONDS, for carrying the flexible suture wire lately introduced into veterinary practice by the President; and an improved unnerving knife by Mr. Ernes, who had obtained the pattern of it from Professor Hausmann, of Hanover.

THE SECRETARY offered to the notice of the Members a solution for medicating tape and cotton-cord for setons, with a needle for passing the latter. The advantages resulting from its use he stated to be, cleanliness and quickness of action. It had been put to the test of experiment by some friends, who highly approved of it, as did the Professors of the College, and this warranted him in giving publicity to it through the medium of the Association. The following letters, expressive of its effects, he had the pleasure of reading to the Members:—

"Laycock's Dairy, Islington,
"Nov. 15, 1839.

"Dear Sir,—I have availed myself of the many opportunities presented to me of trying your medicated tape in cattle, and I consider it a valuable addition to veterinary science. It greatly supersedes the ordinary seton, namely, common tape smeared with the ung. cantharid.; being more speedy in its operation as a counter-

irritant. The inflammation it produces is also more diffused, and it is much more cleanly to introduce, only that it requires a larger eye in the needle than is commonly used.

"I am, truly your's,

"W. STAVLEY."

"Twickenham, Nov. 17, 1839.

"My dear Sir,—Some time since, as you will remember, you kindly furnished me with some of your medicated tape to be employed as setons. Having had many opportunities of putting it fairly to the test, I think that I should be guilty of a dereliction of duty were I not to communicate to you my opinion of its effects. I am fully convinced that it possesses many advantages over the common tape smeared with digestive ointment. It is decidedly quicker in producing the suppurative process, as I have found in severe cases, in which I have inserted in one leg a seton of your prepared tape, and in the other the ordinary tape. A discharge, and copious as compared with the other, takes place much earlier from the medicated seton.

"The cleanliness and neat appearance are other and not small recommendations. If there were any objection to be urged against it, it would be the slight difficulty which is experienced in passing it with the ordinary seton needle; but this has been entirely got rid of by your invention of a superior needle with which to insert it.

"There is another effect which I have observed attending the application of the medicated cotton (and which, by the by, is a great improvement upon the tape), although I fear I should not be warranted in saying that it is an invariable accompaniment: it is, that those luxuriant or unhealthy granulations do not spring from the edges of the incisions after the seton has remained some time, which so frequently attend the use of the common tape. Should this observation prove to be correct in all cases, I think that it will constitute one of its most valuable properties, as much suffering will be spared to the patient by getting rid not only of the pain produced by the application of escharotic dressings, but likewise that arising from the chafing of a cord over such highly sensitive surfaces, while there will be an avoidance of blemish by no cicatrix remaining. This, probably, depends upon the non-application of digestives, which, when used, will remain more or less in a body, as it were, upon the lips of the wound, instead of being diffused equally through the canal, as is done by the medicated cotton cord.

"Believe me, &c.

"J. B. SIMONDS."

Objecting (the Secretary then said) to secrecy in medicine, believing it to be subversive of science, and placing the person guilty of it on a level with the empiric, he hesitated not at once to state the composition of the fluid. It is made as follows:—

One part of pulverized cantharides is to be digested with a gentle heat for fourteen days in eight parts of the oil of turpentine. The solution being filtered, to every ounce an equal portion of Canada balsam is to be added, and in this mixture the cotton-cord or tape is to be immersed until fully saturated; after which it is to be drawn between the thumb and finger, and dried.

He likewise exhibited a method of applying fomentations to the abdomen and sheath of the horse. The apparatus had been suggested to him by Mr. Draper, V. S., of Melbourne.

Mr. G. BALDWIN, Corresponding Member, sent to the Association a quantity of sabulous matter, weighing eight pounds and a half, which he had taken from the bladder of a horse that had been destroyed on account of old age. During life no urgent symptoms had presented themselves. The animal was observed to stale frequently, and when suddenly struck his urine would escape from him with a jerk; but his general health was apparently good.

The following case, bearing a great analogy to the above, was related by Mr. Evison:—

A horse, six years old, belonged to a farmer in the neighbourhood of Louth. In October 1838, this animal and two others were suddenly attacked with indigestion. They were treated accordingly, and two of them speedily recovered; but this one never appeared quite to regain his former health. He, however, got sufficiently well to be sent to work, soon after which he began gradually to lose condition.

It was now discovered that the carter, unknown to the proprietor, had given to these horses a quantity of dry wheat. This, I have no doubt, was the cause of their illness, for I have frequently known indigestion to be produced in a similar way.

Our patient continued at work about a month or six weeks, when his loss of condition and of strength began to be so apparent that he was laid aside. A little before this, also, he had received a blow over the glutæi muscles, which caused an evident loss of action, and consequent absorption of them.

He now began to get very feeble and lame. The owner, however, would not incur any expense in trying to relieve him, but sent him to our infirmary to be destroyed. We kept him about a week, and then put an end to his sufferings.

The symptoms while he remained with us were, an irritable and rather quick pulse—the conjunctiva and other mucous tissues pale—the animal continually shifting his position, and, particularly, his

hind legs, like a horse labouring under spasmodic colic. In attempting to void his urine, he would stand with his hind legs wide apart, and appear to be in the greatest pain. A few minutes would sometimes elapse before any urine was voided, and then it was passed in very small quantities, and quite turbid.

POST-MORTEM APPEARANCES.—The viscera of the thoracic and abdominal cavities were healthy, with the exception of the urinary apparatus in the latter. The kidneys were slightly inflamed, particularly the cortical portion. The bladder was distended to three times its natural size, and, on opening it, I found it to contain a considerable quantity of calcareous matter. There was a mass in the centre as large a cricket ball, of considerable firmness, but which could be broken by the hand. The ureters and the urethra contained a portion of the same calcareous matter. They were lined by it. Some of it was likewise found in the pelvis of the kidney. The coats of the bladder were considerably thicker than in their natural state, particularly the muscular coat.

The Secretary said he had analyzed portions of these deposits, and found them to consist principally of the carbonate of lime. There was also present a small quantity of the earthy phosphates. An interesting inquiry is connected with this subject. When taken from the bladder, the mass is of a soft consistence: it, however, soon hardens, and there is a valuable specimen in the museum of the College, in which the bladder is nearly filled with it. The weight is 13lbs. Now, why have we not a calculus formed? Here are its constituents. The only reasons he could assign were, that there is the absence of the exertion of the molecular forces in order to cause the particles to adhere, or the want of a common nucleus around which they might congregate; and yet this left the question unsatisfactorily answered. For the cause of this morbid deposit we must look to the digestive organs; a circumstance, he thought, too often overlooked.

The Secretary next reported, that MR. F. W. PRICE, the Corresponding Member for Cork, had died since the close of the last session. He would, with the permission of the Chairman, read the following letter, which he had received from him a little after his appointment to this office in the society. It contained an interesting account of "the Irish horse." This had been laid before the Council at their first meeting after the receipt of it. They were much pleased with it, but they thought that their correspondent might be induced to give a more lengthened account of the horse of the Emerald Isle, and he was applied to by the Secretary for this purpose. Ere, however, the task could be accomplished, he was removed to another scene. The Council now deemed it an act of justice to insert, and without correction, this first letter. It

places the talent and zeal and kind-heartedness of their departed friend in a pleasing point of view. They could not offer a more satisfactory tribute to his memory.

Cork, Jan. 31, 1838.

My dear Sir,—In acknowledging the receipt of your letter of the 12th inst., permit me to return you my cordial thanks for your kind recollection of me, and your proposing me as a Corresponding Member of your infant but highly useful Association. To the Council, also, I beg to express my proud gratification in being thus connected with them in effecting the laudable purposes to which the Association is devoted. I much fear, however, that while my heart and best wishes are with you, I shall remain almost a "cipher in the great account."

I have, it is true, a good concern here, unequalled, I imagine, in Ireland (out of Dublin), in every business-like appointment, and my practice too is becoming very considerable; but there is a sameness about it that will put it out of my power to communicate any new facts to your Association.

In the first place, the Irish horses—while in Ireland—are, *as a whole*, very healthy; and we have no heavy draught horses, nor any of those over-fed and highly-pampered animals that you have in England. Moreover, a *hot stable* here is a thing quite unknown; and this, added to the custom of giving a good deal of *soft meat*, by which I mean bran and potatoes, I need not tell you renders them less prone to inflammatory disorders than when other and more stimulating food is given:—but, mind me! it is a notorious fact, and one well known to dealers, and to their sorrow, that there is no horse so liable to disease, when first taken to England, as the young "potato-fed" Irish horse. He is almost certain, as they say, to fall amiss soon after he lands. Our mutual and talented young friend R. Lucas, jun., can testify to the truth of what I have here advanced, and can, too, give you much information on the peculiarity of the symptoms, &c. which they exhibit; for I imagine that some thousands are annually exported, and sold at the Repository of the Messrs. Lucas, of Liverpool, and few persons that I know are more keen observers than our friend above alluded to.

The principal maladies I have to treat are the following,—ophthalmia, farcy, and glanders. The Irish gentlemen, generally speaking, are cruel horse-masters, and ride their horses most unmercifully; commencing too while they are very young: you may therefore, at once, infer that cases of lameness in the legs and feet are very common, and this is the fact. Navicular lamenesses are very prevalent, and a singularly large proportion of the Irish nags are *sparined*. I could say much on this head, and will, perhaps, on a future day.

Apropos:—I often determined on making a few observations on the interesting controversy, or rather disquisitions, that lately occurred between Messrs. Dick and Spooner. In my humble judgment, Mr. Dick, though somewhat caustic, was in the main right.

You may remember that, when I was first at college, I was a great bone-hunter, and a bit of a connoisseur in hocks: I have one by me containing an additional bone, which Mr. Sewell was anxious to get for the museum. Mr. S. then said, that it—the bone—"was spoken of by the French authors."

To return, however, to what I was about to observe:—during my almost daily visits to the knackers, I daily met with those to-me-fancied abnormal appearances between the tibia and astragalus, as mentioned and described by Mr. Spooner. On two occasions, when I thought I had made a discovery, I proceeded in haste to Mr. Sewell, who, to my great mortification, told me I had "*discovered nothing* but what was as common as the moon and stars," or words to that effect, *and that it was not disease, &c.* but just what Mr. Dick has since described it to be. I will only remark further, that the hocks I used to select were, to external view, choice specimens of perfect joints. Accidents in hunting are very numerous, as the whole country is studded with awful walls of stone and gorse; in short, there are no other fences. Ring bones, side bones, and all those diseases which are so common to the legs and feet of the London horses, are frequent here.

The operation of neurotomy, until I located myself here, was entirely unknown, further than by name. I find it of the greatest advantage, and seldom fail of complete success. I need not tell you that it is only *a proper selection* of cases that is required, for, when I am asked to operate on a *dozen*, perhaps I object to do so on *nine* of the number; and I often insure them to stand hunting, &c. &c., by being paid *very handsomely* for the operation, which you know is simple enough.

I have met with no *new disease* since I came to this country; not one!—and as to an epidemic, I cannot learn that there has been any, further than the common catarrhal affection so prevalent in England.

Diabetes is a frequent and obstinate complaint here, and, I am informed, very general in the *north* of Ireland.

On the whole, my practice is exactly like or nearly similar to a London practice, only that I do not get so well paid, and have more prejudice to contend with. But it is all *paid practice*, and consists chiefly of opinions and examinations as to soundness, firing, *à la Turner of course*, and sometimes a good deal of castrating: I insure those patients at *ten per cent.* Though I do not think it prudent, yet I do it; and I suppose shall do so until I get *bit*. *Of*

course, I read THE VETERINARIAN. It is, indeed, valuable to the practising veterinarian, and I wish I could see more contributions from our own and fewer from our continental brethren.

I have really no patience with the army veterinarians, who must have so much idle time on their hands, and could, from their situation, make all and every experiment that would be useful. I am afraid that I should be found too incapable of writing for the public eye, or I should sometimes write to THE VETERINARIAN; however, I may do so yet.

But in conclusion allow me to make one observation, which is, that I think the Association could not turn their early labours to better advantage than by investigating well that dire and fatal malady among cattle, viz. the "murrain," or "black leg," by which, I may say with truth, my own father has, first and last, lost what would amount to a fine fortune.

Believe me, &c., your's,
F. W. PRICE.

The following gentlemen were elected Members:—

Mr. Faulder, Student
Mr. Greaves do.
Mr. G. Fisher do.
Mr. Sibbald do.

The Prize Thesis, by Mr. F. J. Sewell, was then read.

AN ANATOMICAL AND PHYSIOLOGICAL ESSAY ON THE INTERNAL EAR OF THE HORSE.

THE structure and physiology of that important organ, the ear, is a subject not a little calculated to engage the attention and labours of the philosopher, and to excite the curiosity of every inquiring mind. The subject, indeed, is one fraught with interest and instruction, and the knowledge gained is amply sufficient to repay the time and labour occupied in the study of it, especially as the function which it performs bears so important and useful and necessary a part in the animal system.

The arrangement and constitution of its different portions may, at first, appear to be intricate and complicated; but when we proceed to examine the variety of structure which is presented to us, and understand, as we proceed, the various movements and functions which are performed by the different portions of this delicate organ, we become convinced that nothing could be more simple in its contrivance, or better adapted to answer the purpose for which it was designed, or more subservient to the wants and enjoyments

of the animal; and we cannot fail to admire the consummate wisdom and beneficence which the Creator has displayed in the construction of an organ which is capable of collecting and distinguishing every variety of sound, and which is perfect in itself.

The cavity for the reception of the internal organ of hearing is excavated in a bone of rocky hardness. The internal organs themselves present to us examples of the most perfect mechanism; and, by their united and delicate movements, they produce those beautiful effects on the auditory nerves with which we are so familiarly acquainted. The organ of hearing is found to exist in all the warm-blooded animals, and in a great number of the cold-blooded ones; and it is, indeed, a very important organ, for on its perfection the safety of the animal in his natural state materially depends, and by it, in a great measure, his connexions are maintained with surrounding beings. By it he is warned of the approach of enemies or friends; he is invited to approach, or admonished to escape. The ear may be not inaptly compared to a watchful sentinel, that is easily roused, not only in the hours of activity, but during those of repose. The faculty of hearing is more acute in the horse and many other animals than it is in man. Their external organs of hearing are particularly well adapted for the collection and transmission of sound. It is very necessary that they should be so; for man, being endowed with reason, can foresee and avoid dangers which other animals cannot. If his sense of hearing was as acute as that of the inferior orders of animals, his hours of meditation and repose would be subject to constant interruption from the variety of sounds which would be ever annoying him, but which acuteness of sound it is so necessary that the lower orders of animals should possess for their safety and preservation.

Their external organs of hearing consist of large cylindrical trumpet-shaped cartilages, placed on nearly the summit of the head, and capable of being moved in every direction by a set of muscles with which they are purposely supplied. But before we enter into the description of the structure and functions of these parts, it will be necessary to give some account of the nature of sound.

Sound may be defined to be a series of vibrations resulting from the contact and concussion of different bodies, which vibrations are communicated to the atmosphere, and transmitted by this etherial fluid in various directions, and at length reaching the organization of the internal ear, and producing those peculiar sensations which constitute the phenomena of hearing.

All bodies are more or less capable of producing sound by concussion: their particles take on a tremulous motion, which is

communicated with greater or less intensity to the contiguous bodies. The intensity of sound varies according to the nature of the bodies which produce it, and the media through which it is conveyed. The hardest and most sonorous substances will produce, by their concussion, the most tremulous motions and the loudest sounds. The atmosphere is the principal medium through which the vibrations of sound are communicated to our senses; but this property is possessed by other fluids. Sound is propagated through water more quickly and with greater intensity than through the atmosphere. Sound is quite imperceptible when the object struck is *in vacuo:* the air, or some fluid, must be the vehicle of sound.

> "Remove but the elastic pulse of air,
> And the same ear which now, delighted, feels
> The nice distinctions of the finest notes,
> Would not discern the thunder from the breeze."

When the vibrations of sound rapidly succeed one another, they constitute the acute sounds; when they are slow, they form the grave ones. When the rays of sound, or the oscillations of the air, strike on any resisting object, as the side of a house or a hill, they are reverberated, and form what is called the echo. The velocity at which sound travels, although very great, bears no comparison to that of light; so that in a distant thunder-storm the flashes of lightning will be instantaneously apparent to our senses, but the roar of the thunder will be some moments before it reaches our ears. The intensity of sound, also, is greater when transmitted through a dense medium, as water or a foggy atmosphere, than when it passes through a clear or more refined one.

We will now consider the structure by which the sonorous rays are collected and transmitted to the auditory nerve. The organ of hearing in the horse, and in many other animals, consists of two distinct parts, separated from each other by a membraneous partition: that which is internally placed constitutes the internal ear; that which is external, the external ear. It will be convenient for us to enter into a brief description of this latter, before we proceed to the minutiæ of the former.

The external ears of quadrupeds, or that part which is visible in the living animal, are not widely different from one another either in shape or situation. The ear usually occupies the summit of the head, where it is enabled to move and rotate, and to collect sound in every direction; and it either consists of broad, pendulous flaps of cartilage, as is the case with the elephant and some other animals, or, more frequently of erect pointed cones or rounded trumpet-shaped bodies of various lengths and sizes in different animals. In man the ear is formed of a flattened oval cartilage, placed on the

side of the head, whose external surface is marked with eminences and depressions which lead to a cavity called *the conch*. In the horse the body commonly known as the ear is an erect, conical, trumpet-shaped, and elastic body, remarkable both for its mobility and the expression which it imparts to the countenance of the animal. It is formed by a large trumpet-shaped cartilage, named the conch, which is placed upon a smaller and circular one, called the annular cartilage. This latter cartilage connects it with the bony structure of the ear, and forms a basis on which it may move readily, and in every direction, without causing any mechanical impediment to the transmission of sound. These two cartilages form one continuous body, and are both lined with a thin vascular covering of common integument, under which no adipose matter is allowed to accumulate.

The conchal cartilage is of considerable size, and presents externally a large oval opening, directed outwards and backwards. Its interior is remarkable for a thick bushy hairy covering, and for a ceruminous secretion which preserves the moisture and pliability of the parts, and prevents the entrance of insects and other noxious substances.

Beside these two cartilages, the ear is furnished with a third one, called the *triangular* or *scutiform cartilage*, and with a muscular structure consisting of eight or nine distinct muscles. By these means it is enabled to move in every direction, and almost revolve on its axis; so that this conformation of the external ear, from the elasticity of its materials, the peculiarity of its shape and position, and the mobility with which it is endowed, is admirably calculated not only to convey the sonorous rays to the internal cavity which we are about to describe, but, at the same time, to increase their impression, and render it more intense.

Having thus described the general peculiarities of the external ear, we will proceed to the consideration of the bony structure which contains the internal ear, and which is known as the *petrous portion of the temporal bone*. Now in the human subject, and some of the inferior animals, these bones form a part of what are called the temporal bones; but in the horse they are separate and entirely distinct from the two bones called the squamous portion of the temporal bones. The squamous temporals form the lateral boundaries of the cranial cavity, and are easily distinguished from the petrous ones, with which they are seemingly connected. It is in this petrous bone that the delicate structure of the internal ear is lodged secure from external violence. These bones are remarkable for the irregularity of their shape, the number of their projections and foramina, and the extreme hardness of the bone of which they are composed. This latter quality, indeed, is so promi-

nent in the horse, that they more resemble ivory than bone, so dense and compact is their structure. They are situated between the temporal and occipital bones. The former detaches a small process from its zygoma, which sustains it in front, and it is between these two bones that the petrous temporal bone is, as it were, wedged and immoveably fixed. Although it is never found united to them by bony material, yet the articulation is so strong and complete, as to require the removal of the contiguous bones before we can effectually disunite it. It presents an outer and an inner surface for our consideration.

From the superior part of its external or mastoïdeal surface it detaches a lengthened process which may be called its crest, and which assists in the formation of the base of the occipital crest. Below this the bone is of a spheroïd character, and forms the posterior mastoïdeal process which contains the mastoïd cells. This spheroïdal-shaped or mastoïd process is very much developed in animals of the *canine* and *feline* species, and consequently the mastoïdeal cells contained within are of a proportionate size. Projecting from the superior and anterior parts of the mastoïd process is the auditory process, by which is formed the external auditory foramen, or the meatus auditorius externus. This meatus is of a conoid shape, and gradually diminishes in diameter from its base to the summit, until at last it terminates, in an oblique direction, upon the membranum tympani.

This process, cartilaginous at its commencement, is embraced by the annular cartilage, and forms the medium through which the external is connected with the internal ear. It is lined by a continuation of the common integument, which is here coated by a white ceruminous secretion. It is through this cavity that the rays of sound have to pass before they can reach the tympanum.

Below and posterior to the auditory process, and surrounded by a jutting rim of bone, is a small bony projection, called *the hyoïdeal process.* This, in the recent subject, is covered and surmounted by a strong cartilage, which forms an articulation with the extremity of the long corner of the os hyoïdes.

Below, and inwardly placed with reference to the hyoïdeal process, is *the styloïd process*, and behind the styloïd process are two foramina; one a mere slit in the bony walls, for the Eustachian tube—the other for the transmission of a branch of the seventh pair of nerves.

Its anterior and posterior surfaces are roughened by its attachment to the contiguous bones; its internal or cerebral surface is comparatively smooth, and presents, rather below its middle, a foramen of considerable size, called the *foramen auditorium internum.* It is through this foramen that the portio mollis, or auditory nerve,

passes in company with the portio dura, to distribute its ramifications throughout the interior of the labyrinth. The bottom of this foramen is divided into two parts by a small ridge of bone; one division leads to *the vestibule*, the other to *the cochlea*.

We will now proceed to the contents of this important and remarkable bone. If we succeed in making a proper section of this bone, we shall see that its interior comprises two distinct cavities, which differ from one another both in structure and in their general appearance. That which is situated in continuation with the meatus auditorius externus, from the fancied resemblance which it has been said to bear to the cavity of a drum, is called *the tympanum;* the other, which is on the inner side, and in continuity with the foramen auditorius internus, is, from the comparative intricacy of its interior, called *the labyrinth*. The tympanum is a cavity of a very irregular shape, bounded by the outer walls of the temporal bone and the mastoïd cells on the one side, and by the walls of the labyrinth on the other. It is lined by a mucous membrane of extreme sensibility, and is furnished with an outlet which gives passage to a canal or tube, called, from its discoverer, the Eustachian tube.

The Eustachian tube takes its origin from a somewhat deep fossa at the bottom of the tympanum, whence it proceeds onwards, gradually increasing in caliber, until it arrives at a large cavity situated at the back of the fauces, called the *Eustachian cavity*, or *guttural sac*. There are two of these cavities, one for each tube, and they open into the fauces. By means of this contrivance the tympanum is enabled to maintain a free connexion with the atmospheric air.

The beauty and wisdom of this structure are at once apparent. In order that the contents of the tympanum should perform their functions without inconvenience, and that no diminution of vibration should take place, it was necessary that this cavity should be filled with some such fluid as air; but as the atmospheric air is, by slight changes of temperature, easily rarefied or condensed, a tube is provided which has free intercourse with the external air, and which permits of the ingress or egress of the aëriform fluid, according as it is required. Nothing can more exemplify the wise design of Providence than this peculiar arrangement. At the entrance of the cavity of the tympanum, and interposed between it and the external ear, is a beautiful delicate membrane, called *the membranum tympani*, lined on one side by a thin cuticular reflection, and on the other by the mucous membrane of the tympanum. Its circumference is attached to a small rim of bone, but in such a way as to permit of its assuming a funnel or cup-shaped form, having its concave side facing outwards, and its convex side facing in-

wards, and firmly attached to one of the small bones which we are about to describe. The membrane itself is one possessed of great sensibility, and is supplied by branches from the fifth and seventh pairs of nerves.

Sir Everard Home has discovered muscular fibre in the membranum tympani of the elephant; and should this be the case with other animals, it would probably enable the membrane to adapt itself to the different impressions of sound, whether acute or grave.

The next object that strikes our view is a chain of bones extending across the cavity of the tympanum, and firmly attached to the membranum tympani on the one side, and to the membrane of the foramen ovale on the opposite side. They are four in number, of a very delicate but compact structure, and named *the malleus, the incus, the orbiculare*, and *the stapes*. They are necessarily very small, but they are covered with a fine delicate membrane. They possess articulating extremities, defended by elastic cartilage, and by the opposition of their extremities they form distinct joints with one another.

The function which they perform occupies a very important place in the economy of the ear, and, taken as a whole, they form a beautiful instance of animal mechanism, and not to be surpassed by any in the system.

We will now examine them separately, and first *the malleus*. This bone has been so called from the resemblance which it bears to a hammer, both in its shape and in the function which it performs. It consists of a body, and of a lengthened process which is called its handle. The junction of the handle and the body or head forms a sort of right angle; and, not far from this angle, the handle detaches a small acute tapering process, which is received into a depression in the walls of the tympanum. This process forms a sort of fulcrum on which the bone is enabled to perform its vibratory movements.

The head of the malleus articulates with the next bone, which, from the relation it bears to the malleus, has been termed *the incus*, or *anvil*. It consists of a body and two processes of unequal length, which may be called its crura. By the shorter, it is attached to the walls of the tympanum—by the longer, it articulates with the orbiculare.

The orbiculare is the smallest bone in the body, not being half so large as a pin's head, and it is situated between the incus and the stapes.

The stapes bears a very great resemblance to the common stirrup, and is attached by a flattened oval base to the membrane of the foramen ovale.

The foramen ovale, or fenestra ovalis, is an oval opening look-

ing into the vestibule. Close to it is another foramen, situated between the tympanum and the base of the cochlea, and closed by the lining membrane of the cavities between which it lies.

Beside these remarkable structures which we have described, the cavity of the tympanum contains a set of small muscles. They are called the *laxator tympani*, which arises from the walls of the tympanum, and is inserted into or near the middle of the handle of the malleus; the *tensor tympani*, a long slender muscle, which arises near the Eustachian tube, and is also inserted into the handle of the malleus. The stapedius, the largest of the three muscles, and particularly developed in the horse, arises from an eminence in the tympanum, called the pyramid, and is inserted into the stapes.

We have now arrived at the second division of the internal ear, which is more complicated in its arrangement than the one which we have considered, and differs from it more especially in its being a circumscribed or closed cavity, and containing an aqueous fluid. From the numerous windings of its interior, and from the various passages and convolutions which it forms, it has obtained the name of *the labyrinth*. It is here that the vibratory motions of the air diffuse and expand themselves, exerting a peculiar impression on the auditory nerve which is expanded and distributed minutely throughout the whole of its cavity, and thus producing the sensation of sound.

The cavity of the labyrinth presents three distinct parts for our consideration;—a winding convoluted portion inferiorly, called *the cochlea*—a number of curved passages or canals superiorly, called *the semicircular canals;* and, between a small cavity known by the name of *the vestibule*. The vestibule is a small irregular-shaped cavity, continuous above with the semicircular canals, which communicate with it by five openings. It is also connected below with the cochlea, and outwardly with the tympanum, with which it would also communicate by means of the fenestra ovale, were it not prevented by means of the membrane which closes this opening; so that there are no less than seven openings or foramina in the walls of the vestibule—five above, from the semicircular canals, one from the cochlea, and one from the tympanum.

Above the vestibule are three *semicircular canals* or passages which are excavated in the superior part of the petrous temporal bone. They take their origin from and terminate in the vestibule by means of five openings, which may easily be distinguished in the dead subject. These canals are quite distinct from one another, with one exception—two of them, previous to their re-entering the vestibule, joining their canals, and penetrating into that cavity by means of one large foramen instead of two. They are all filled

with the fluid of the labyrinth, and in them float some of the ramifications of the auditory nerve, but which do not come in contact with their walls.

Below the labyrinth, and occupying the inferior and inner part of the temporal bone, is *the cochlea*, which derives its name from its resemblance to the convolutions of the shell of a snail. It is peculiarly large in some animals, and is of considerable size in the horse, when compared with the other parts of the labyrinth. It is of a pyramidal shape, consisting of a nucleus or centrical portion of bone, round which winds, in a spiral shape, a thin laminated plate of bone, so as to form two or three convolutions, which are called the *laminæ spirales*. It consists of a base which rests upon a part of the cribriform plate of the internal auditory foramen, and of an apex which approaches near the Eustachian tube. The base of the cochlea communicates at one part with the vestibule, and at another part, by means of the foramen ovale, with the tympanum. The centrical portion of bone round which the cochlea winds is called *the modiolus*. It opens at its apex so as to form a funnel-shaped cavity, called *the infundibulum;* and it is perforated in every part by the ramifications of the auditory nerve, which enter the cavity of the cochlea through its medium. Altogether the cochlea forms the miniature representation of a snail's shell.

The cavity of the labyrinth is a very important division of the internal ear, and, from its containing the soft pulp of the auditory nerve, which alone is sensible to the vibrations of sound, may be said to be the true seat of hearing. It is remarkable for its canals, and for the convolutions of the cochlea, by which it presents a larger and more extended surface for the expansion of the auditory nerve.

Let us now see how this nerve enters the cavity of the ear, and the manner in which its distribution is effected.

The eighth nerve, or, as it has been too long called—confusing all distinctions of structure, function, origin, and termination—the portio mollis, or soft portion of the seventh, takes its origin from the floor of the fourth ventricle, at the slit of the calamus scriptorius. Hence it passes down the side of the medulla oblongata, until it reaches the portio dura, or facial, or true seventh nerve, and then, in company with it, or only separated from it by a small artery, it gains and penetrates the foramen auditorium internum. Its course is now short; it abuts upon a cribriform or perforated plate of bone closing the passage, and then, dividing into various portions, it spreads itself over the internal chambers of the ear. It is a cribriform plate of bone which it penetrates. Part of its ramifications enter the cochlea, another part the vestibule, and a third pierces the modiolus; and, after threading the innumerable foramina of

this bone, ramifies minutely on the surface of the lamina spiralis. Floating in the fluid which occupies the cavity of the labyrinth are some productions of a very fine membrane. They originate in the form of a membranous sac in the vestibule, called *the sacculus vestibulus*, from which are detached several small membranaceous canals, which fill the semicircular ones. Similar detachments are sent off to enter the cochlea, and to wind round the lamina spiralis, forming what is called the *zona mollis*. They are all filled with a very limpid fluid, and are separated from the walls of the cavity in which they are contained by a very clear lymph. It is on this membrane that the soft pulp of the auditory nerve is expanded; and it is through its medium that it is conveyed over every part of the labyrinth, not adhering to the walls of the cavity, but floating within it, loose and unattached.

Let us now proceed to the elucidation of the various motions and influence of the structure of the internal ear, by which the rays of sound, if they may be so termed, are transmitted along its cavity, and by which the sense of hearing is produced. We have traced the course of the sonorous rays as far as the membrane of the tympanum, which, from its funnel-like shape, is capable of performing more extensive vibrations, or more extensive motions, than it could do if it were drawn tightly across the opening of the tympanum. The rays of sound, or the vibrations of the air, strike on this membrane, and cause it to vibrate more or less, according to the rapidity or force of the external vibrations; and the chain of bones forms the medium through which the vibrations are transmitted from the tympanum to the inner cavity of the ear.

The membrane of the tympanum being closely applied to the handle of the malleus, must necessarily by every vibration cause a corresponding movement of that bone: but the malleus is so constructed and so situated as to act upon the principle of a lever, and thereby increase the intensity of the vibration, which it communicates to the next bone; for the distance between the point where the power is applied and the little bony process or fulcrum on which it moves being more than twice as great as that between this fulcrum and the head of the malleus, or the point where the weight is to be moved, it must, according to the acknowledged principles of mechanics, act with an increased power, and communicate to the next bone a vibration or concussion which is more than twice as great as the vibration which it first received.

The movements of the next bone are also regulated on the principle of the lever, but of a different description to that just described. Here the body of the incus, which lies between the extremities of the lever, forms the place where the moving power is applied, while its short crura, attached to the walls of the tympanum, constitute its

centre of motion. Its long projection, which is attached to the orbiculare, is its moveable point. The incus, on receiving the concussion of the malleus, immediately acts in unison, and communicates to the stapes, through the medium of the orbiculare, a more powerful vibration, by which the stapes and the membrane on which it rests are projected into the vestibule. The intervention of a small bone like the orbiculare, between the incus and the stapes, is supposed to increase the facility of motion, and, at the same time, to convey the impression of the incus in a perpendicular direction upon the stapes.

The vibrations received by the stapes are now communicated to the membrane of the foramen ovale, which is sufficiently lax to be capable of vibrating in unison with the small bones of the tympanum. These vibrations are propagated to the inner cavity of the ear; and this cavity, for an admirable purpose, is completely filled with fluid. It is here that they have to produce their final and important impression on the auditory nerve. The contents of this cavity, therefore, are of such a nature as still farther to increase the intensity of the vibration, and at the same time to produce a distinct impression on the nerve which it contains. How is this accomplished? We have seen that, the denser the medium through which sound is conveyed, the quicker will it travel, and the more intense will be the effect produced. Thus it is in the present case. The vibrations being transmitted through water, will be rendered in a quadruple degree more intense.

The membrane of the foramen ovale by its oscillations transmits the vibrations to the fluid of the vestibule in contact with it. This affects the next portion of fluid, and so on over the canals and cochlea, till the whole of the fluid in the labyrinth is set in vibration. This fluid, by its oscillations, affects the portio mollis or auditory nerve, which is distributed plentifully and continuously throughout all its parts. The auditory nerve conveys these impressions to the brain, where they are recognized, and all their varieties discriminated and registered.

The movements of the bones of the tympanum are probably regulated, to a certain degree, by the small muscles of which we have before spoken, for which purpose they must possess a susceptibility of being impressed by the stimulus of sound. Two of them, by their close connexion with the membranum tympani, may regulate the vibrations of this organ, by rendering it more or less tense, according to the loudness of the sound which it receives. By their action they will also regulate the vibrations of the chain of bones, and prevent the too long continuance of the vibration and consequent confusion of sound.

We have thus arrived at the close of this important subject. A

knowledge of the structure and economy of this important part may, perhaps, be more necessary to the human practitioner, as far as its pathology is concerned; but, in us, an entire ignorance of so remarkable a portion of the animal economy would argue a considerable degree of neglect. Our knowledge, however, on this subject, as on many other important parts of the animal frame, is to a certain extent limited. We may, perhaps, with considerable certainty, arrive at the precise way in which the different parts perform their functions in the transmission of sound; we may understand the general phenomena which are produced by the action and stimulus of the sonorous rays; but how it is that different tones should produce such a variety of impressions? How it is that the action of the voice should produce the sensation of so many different words, and not a mere sensation of sound; and how it is that these different impressions should be so nicely, so perfectly, and so correctly distinguished? These are phenomena of which we are partly, not to say wholly, ignorant.

TUESDAY, DECEMBER 3, 1839.

Mr. Daws, Secretary to "The Club of United Veterinary Surgeons," presented the following Thesis.

It contains the history of certain experiments in which he and a few other zealous practitioners had engaged respecting the newly introduced operation of "Castration by Torsion," and which originated in a conversation that took place at one of the meetings of the Club. The result of this conversation was, that Mr. Daws and two other zealous members of the club, Messrs. Simonds and Wardle, resolved to put the value of the operation fully and fairly to the test.

Mr. Daws was afterwards requested by his colleagues to introduce a short sketch of their proceedings, by some general observations on this mode of operation; and with a degree of modesty and kindly feeling which he may be assured that his brethren will duly appreciate, he gives to the memorial the following title:—

CASTRATION BY TORSION.

THE FIRST FRUITS OF THE UNITED VETERINARY SURGEONS' CLUB.

"Scientia, unitas, et amicitia."

1839.

Mr. President and Gentlemen,—I hail with feelings of delight the commencement of the Fourth Session of the Veterinary Medical Association.

Long may the same fostering care which it has hitherto experienced from some of the ornaments of our profession, continue to give importance and inestimable value to its labours—long may harmony and friendship and honourable feeling preside over its meetings, and render them delightful and useful, while the simple ungarnished history of its proceedings is gradually circulated, through the medium of THE VETERINARIAN, from east to west, and from pole to pole! Thus will the noble object we have at heart—the advancement of veterinary science—be gradually and fully accomplished.

My appearance before you at so early a period of the session may, perhaps, demand some explanation, which I will briefly and readily afford; but at the same time you will allow me to state, that I am fearful I shall not do justice to a very important subject that is not altogether new, but which, I hope, will ultimately tend to promote the cause of humanity and science.

At the commencement of the year 1838, a few liberal minded individuals, practitioners and others, connected with veterinary science in and around the metropolis, and who, with a few exceptions, had known each other many a long day, formed themselves into "the United Veterinary Surgeons' Club," and adopted for their motto, "Scientia, unitas, et amicitia."

The Assistant Professor of the Royal Veterinary College is proudly acknowledged as their perpetual President; the Editor of THE VETERINARIAN, a man who has done more than any other individual in existence to exalt the character and respectability of the veterinary profession, also ranks as a member. Nor must the worthy Secretary of this Association be forgotten: he is ever active, ever indefatigable in his exertions for the accomplishment of every object that will tend to the benefit of our art.

Many other members of this Association are also attached to the Club, while I humbly represent them as their Secretary, an honour which I sincerely appreciate, and I thank them from my heart for the confidence which they have been pleased to repose in me. To me, therefore, the task of giving publicity through the medium of this Association to this their "First fruits, Castration by Torsion," has devolved.

To Messrs. Simonds and Wardle much credit is due for the bold and decisive manner in which they have tested the operation, and established its superiority over the modes generally practised.

The result of my own experience will also be appended, but that will have little weight when placed in juxta-position with the records of the gentlemen whose names I have just mentioned.

Pope has beautifully said, that "every man is happy when engaged in his favourite pursuit; that even the fool is happy, because

his stock of knowledge is limited to what it is; and yet—strange paradox!—all men are grumblers."

The above quotation, I think, is not unsuited to the subject under consideration, since there are many different ways of performing castration, and for each method many staunch supporters will be found, who all speak in the highest terms of commendation of the practice adopted by themselves, and, perhaps, a little too much undervalue the means pursued by other individuals.

A few words respecting the natural history of the animal who is the subject of these operations may not be considered out of place.

The horse belongs to the class, mammalia—order, pachydermata. He is a native of several districts of Asia and Africa; and in the southern parts of Siberia large herds are occasionally seen. The wild horse is extremely active, swift, and vigilant. A sentinel is placed over each herd, who gives notice of the approach of danger, and, warned by him, they all gallop away with astonishing rapidity.

In an improved state, the horse is found in almost every part of the world. As our domesticated servants, their docility and gentleness are unparelleled; and they contribute more to the convenience and pride of man than all the other animals put together. But, alas! how often are they strangely and shamefully ill treated by those whose duty it should be to protect instead of abusing them!

Virgil has given the following beautiful and expressive description of this animal in his Georgics:—

> "The fiery courser, when he hears from far
> The sprightly trumpets and the shouts of war,
> Pricks up his ears, and, trembling with delight,
> Shifts place, and paws, and hopes the promis'd fight:
> On his right shoulder his thick mane reclin'd,
> Ruffles at speed, and dances in the wind.
> His horny hoofs are jetty black and round;
> His chine is double. Starting with a bound,
> He turns the turf and shakes the solid ground:
> Fire from his eyes, clouds from his nostrils flow:
> He bears his rider headlong on the foe."

The natural diseases of the horse are very few, but ill usage or neglect, and, frequently, our over-care, bring on a numerous train of evils, painful and destructive.

We first hear of the horse as domesticated among the Egyptians about 1700 years before Christ. He does not appear to have been then employed for agricultural purposes, but was ridden or yoked to the chariot for the purposes of state or of war.

Whether, at this period, castration was practised for the purpose

of subduing his passions or rendering him more subservient and docile, we pretend not to affirm; but by a reference to the history of ancient Greece in the time of Cyrus, king of Persia, who flourished 548 years before Christ, we find that emasculated men —eunuchs—were entertained at his court, and confidentially employed; therefore it will not be too much to infer that a similar operation might be practised on the lower orders of animals.

After the rude ages of barbarism had passed away, and mankind became more civilized, and different countries more humanized in their intercourse with each other, horses were more generally used for purposes of comfort and luxury; and Hierocles, a Platonian philosopher, who flourished in the fifth century, is the first author of whose writings on the subject of castration mention is made. His works, however, are now lost; but Photius, who wrote after him, makes frequent quotations from them.

Before proceeding further, it will be as well to take a slight review of the anatomical structure of the parts included in the operation.

The previous preparation and after-treatment are purposely omitted, many other abler pens having contributed the most useful and complete information on this head.

For the mode of casting and securing the patient, a perusal of Mr. Percivall's invaluable Lectures, vol. iii, page 122, is advised.

The spermatic cord itself is composed of the vas deferens, the spermatic artery, and corresponding vein; also a small vessel termed the artery of the cord, and absorbents, nerves, &c. These are united together by cellular substance, and covered by the tunica vaginalis reflexa.

The original mode of castration, or, at least, that of which we have the earliest record, is by the clams. It was spoken of by Hierocles, who transmitted the knowledge of it to the Romans. The Spaniards, and the French afterwards, adopted this method. It is performed in two ways,—either by including the tunica vaginalis lining the scrotum, termed the covered operation; or by merely compressing the cord itself within the clams, which has been termed the uncovered operation.

With some it has been usual to introduce a caustic substance into grooves made purposely in the clams. This, in my humble opinion, is entirely unnecessary, and it frequently produces considerable tumefaction, &c. The pressure of the clams is quite sufficient of itself to destroy the vitality of the parts with which they are in contact. We should, perhaps, recollect at the same time the words of old Jeremiah Bridges, that "he must be a very rash adventurer who applies caustic without having properly reflected on the consequences that may ensue: such a man may, in a literal

sense, be said to play with fire, and jest with the most dangerous of edged tools."

For a better description of this mode of operation, the essay of Mr. Goodwin, in the 1st vol. of THE VETERINARIAN, may be perused and studied.

There are other practitioners who adopt the ligature around the cord with perfect success.

Tearing the cord asunder has also been tried; but the common mode of arresting the hemorrhage by means of the actual cautery seems to have been preferred by the greater number of practitioners, as the safest and most expeditious way of operating: but there is, at least, an appearance of brutality in this method of proceeding; and much unnecessary burning and pain are sometimes actually inflicted, especially when this operation is performed by *ignorant and unskilful hands.*

No man was ever so completely skilled in the knowledge of his profession as not to receive new information from age and experience.

In the year 1834, W. B. Costello, Esq., read a paper, at the Westminster Medical Society, on the Torsion of Arteries for the purpose of arresting hæmorrhage, and in which he acknowledges his obligations to M. Amussat, of Paris, for his kindness in directing many expements performed on this interesting subject. To M. Amussat, therefore, belongs the merit of this invention.

THE VETERINARIAN of 1834 contains Mr. Costello's essay, and some interesting observations by Mr. Youatt and others, on the subject. The prediction of Mr. Youatt in 1834 has, I am happy to say, been verified by Mr. Simonds, who is justly entitled to the thanks of his professional brethren for the praiseworthy manner in which he has proved its superiority over all other means of castration.

The operation of castration by torsion is performed as follows:—

An incision through the scrotum on one side is first made with the scalpel, sufficiently large to admit of the free escape of the testicle; the vas deferens is then divided with the same instrument, about an inch above the epidydimis. By pursuing this plan, the resistance of the cremaster muscle will be defeated, and the testicle, with its vessels, will lie in a quiet state until the conclusion of the operation.

A longitudinal incision is now to be made through the tunica vaginalis reflexa, and a portion of the spermatic artery laid bare, and freed from its adjacent attachments. The torsion forceps is then to be applied to the artery, which should be divided in that portion immediately below the grasp of the instrument, the thumb and index finger of the left hand pressing back the blood in the

vessel. The artery is then to be twisted by the forceps, held in the right hand, until its elasticity is destroyed, and it will no longer recoil, but remain curled up in a knot. The torsion forceps may then be removed with safety, and the remaining portion of the cord should be divided, and returned within the scrotum.

Should the hemorrhage from the artery of the cord prove at all troublesome, it may be arrested in a similar manner.

The number of twists will depend upon the size of the artery, from four to six revolutions being sufficient for small, and eight or ten for larger vessels.

The effect which torsion produces on the vessel, independent of destroying its elasticity, is a laceration of its internal tunic, the edges of which become speedily agglutinated by means of plastic lymph: a clot of blood plugs up the end, so that the obliteration is rendered doubly secure.

The following illustrative proofs of the value of torsion are from the records of Mr. Wardle, of East Sheen:—

1838		
April 12.....	A three-year-old ass	experimental.
—— 16.....	A one-year-old ass	
May 3.....	Seven yearling colts (three thoroughbred, and four of the cart kind)	
—— 21.....	A yearling colt	
August 28.....	A three-year-old	
September 26....	A two-year-old	
October 21.....	A two-year-old	
1839		
July 26.....	A four-year-old horse	
August 3.....	A three-year-old ass	
September 2.....	A four-year-old horse	

The foregoing sixteen cases all did well in fourteen or sixteen days, and could then have returned to labour if required.

"As an individual," to use Mr. Wardle's own words, "I shall never again have recourse to the actual cautery, the operation being more scientific, and less painful to the animal, and, in my humble opinion, a much safer method."

Mr. Wardle also acknowledges his gratitude to his friend Mr. Simonds for having introduced to his notice the performance of the operation.

The author of this essay also feels himself much indebted to his friend and fellow-pupil, Mr. Simonds, for many hints received respecting the practice of torsion. He at one time was a staunch opponent of it; but now he is proud to say that he has reformed, and is both an ardent admirer and strenuous supporter of that knowledge which is the result of indefatigable and accurate inquiry

and experience. His difficulties are all overcome, his former ignorance dissipated; and he is humbly accompanying his friends in the paths of improvement,—of practical science and humanity.

Being a resident in this metropolis, it is seldom that he is called upon to perform this operation, but these are the results of his own experience:—

Sept. 3*d*, 1838.—I operated for experiment upon an aged stallion: he died on the following morning in consequence of hæmorrhage from one cord. I examined the parts after death, and found the left spermatic artery perfectly plugged up; the right had recoiled and untwisted itself: its mouth open and free from blood.

October 25*th*.—I operated upon another subject. I employed more torsion, and with a successful result. This subject was more than twenty years old, and had covered occasionally within a short period before the operation. He was bought for this experiment, and I destroyed him four days afterwards, and examined the parts. The vessels were perfectly impassable by means of a clot at the divided ends. The inner coat was torn and adhering. There was a slight appearance of healthy purulent secretion on some spots.

April 30*th*, 1839.—A two-year-old colt.

May 29*th*.—A two-year-old colt*.

June 3*d*.—A four-year-old colt.

These results exceeded my expectations. No constitutional excitement supervened, and very little tumefaction of the parts adjacent ensued.

I have now the gratification of appending a Report, which, doubtless, has been anxiously looked for. It is from the pen of Mr. Simonds. It will be observed that it is written altogether independent of my imperfect remarks, and which, perhaps, it ought to have preceded. The little repetition which thus occurs will not be unprofitable, while the lucid view given by him of the manner of performing the operation under various unexpected circumstances cannot fail to impress the mind of every one present with its value. It will be accepted by you as the perfecting of the Essay, and without which it would have been comparatively *maigre*.

"REPORT.

"In the year 1834 a paper appeared in THE VETERINARIAN, from the pen of Mr. Costello, upon the torsion or twisting of arteries as a ready means to suppress hæmorrhage. My attention was particularly excited by this novel, safe, and scientific method of

* In this case the spermatic artery had divided into three branches in each cord, an unusual circumstance. The hæmorrhage, however, was easily arrested by the forceps.

accomplishing so important an end; and I determined to institute some experiments for the purpose of ascertaining how far this hæmastatic process could be depended upon in the operation of castration in the lower animals.

"Shortly afterwards two asses were procured; one four, the other two years old, in order to carry into effect my previous determination.

"CASE I.—The four-year donkey was cast and confined in the usual manner. The left testicle was first let out from the scrotal bag by means of the scalpel, and the finger was then passed between the cord and the vas deferens, so as to separate these vessels. The seminal duct was next divided, thus giving me full controul over the spermatic cord, and preventing its being retracted by the power of the cremaster muscle. The testicle being allowed to remain attached to its vessels, the spermatic artery, at about one inch from the testis, was next laid bare, a pair of sharp-pointed scissars being used for this purpose. The torsion forceps were then placed on the vessel, and it was divided immediately behind and close to the forceps: by this proceeding I was not annoyed by the loss of blood, which necessarily must have been the case had I divided the artery previous to the application of the forceps. The vessel was drawn gently forwards, to the extent, probably, of three-fourths of an inch, and about a dozen turns made upon it. It was then liberated. No blood escaped for a few seconds; but afterwards the jet was considerable, and I was obliged to seize it again, and make more twists upon the coats. This effectually staid the escape of blood, and the testicle was then cut away.

"The other testicle was operated upon in the same manner, and the hæmorrhage suppressed. The patient was then let up, and all appeared right.

"On examining him about a quarter of an hour afterwards, I found the right spermatic artery bleeding, from my not being *au fait* in the manipulation of the forceps. My patient was obliged to be re-cast, and with some trouble I secured the vessel by ligature. Some inflammation and swelling followed the operation, but the case ultimately did well.

"CASE II.—The two-year-old donkey was subjected to the same operation. There was no secondary hæmorrhage, and the patient likewise did well.

"Feeling perfectly satisfied from these two experiments that the thing was practicable, notwithstanding the slight failure in the first instance, I much wished to introduce it generally among my employers; but to this I found great objection on their parts, and which, perhaps, was farther increased by my being yearly in the habit of operating upon a considerable number of colts by the

actual cautery, and seldom or ever losing a case; consequently, when I suggested the adoption of a different plan to the employer, he would say, 'No; I have always had good luck, and I do not wish for any of your new-fashioned cutting.'

"CASE III.—I however, on the following spring, had one other opportunity of trying it: this was upon a yearling colt. I experienced no difficulty in arresting the bleeding, pursuing precisely the same plan as in the first case. The animal did well, and was turned to grass a few days afterwards.

"CASE IV.—In 1836, circumstances induced me to reside more in the immediate vicinity of London; but it was not until 1838 that I had again any opportunity of further putting to the test this scientific method of suppressing hæmorrhage in the operation of castration. On April 14th, in this year, a yearling colt of my own, having been prepared in the usual manner adopted in the country, viz. kept without food the night previous, was cast and operated upon by torsion, in the presence of several highly valued and scientific friends. Nothing could exceed the success attending it: there was no hæmorrhage nor after-swelling; and the colt was turned to grass for a summer's run upon the fourth day following the operation.

"CASE V.—*May 25th.*—A four-year-old mule was admitted for castration. There was no difficulty in stopping the bleeding. He was discharged six days afterwards, perfectly recovered. In this case there was slight swelling afterwards, but which required only exercise to remove it.

"CASE VI.—*June 17th.*—A donkey, four years old, was admitted for the like purpose. We had here some hæmorrhage shortly after he was let up, and which I have no doubt came from the artery of the cord; it stopped without any application, and the animal was soon well.

"CASE VII.—*June 22d.*—A thoroughbred yearling colt was cast for castration. We had some little difficulty in fixing this young irritable stripling, so as to keep the hind legs in a proper position; for, should the animal succeed in getting them straight when the feet are confined to the collar of the rope, the thighs are necessarily brought so close together that the operator is confined in his manipulations. I found the testicles small, and not fully descended into the scrotum; the left, as is usually done, was first let out. The spermatic chord was so short that I had some difficulty in applying the forceps upon the artery. I succeeded, however, in this; and a few turns entirely arrested the flow of blood: the other testicle was then exposed; but, even after having divided the vas deferens, and getting rid of the power of the cremaster muscle, I could not draw the cord sufficiently forward to fix the torsion for-

ceps upon the artery, and was obliged to have recourse to other means to finish the operation, which was completed by the actual cautery. No swelling followed the operation, and the patient was turned to grass in about a week afterwards. This case is valuable, as shewing that we cannot always succeed in yearling colts in applying torsion to the vessels.

"CASE VIII.—A valuable chestnut horse, aged seven years, the property of — Stanley, Esq., being prepared by low diet and aperient medicine, was cast. The spermatic cord of the left testis was considerably enlarged, and serous effusion had taken place into the cellular tissue. The artery, about two inches above the gland, was found to divide into three branches. By proceeding cautiously these were in turn secured by the forceps, and the bleeding stopped. The artery of the cord, however, gave out a fine stream; but as I seldom had been accustomed to attend to this, the animal was let up without any means being adopted to arrest the hæmorrhage.

"He continued to bleed a little for about two hours; and the scrotum on that side was filled with coagulated blood, producing some pain, accompanied with an accelerated pulse and hurried breathing. An opiate was given: this shortly produced relief, and all went on well. The coagulum was removed on the following day, and the parts fomented. More swelling took place in this case than in any of the preceding ones; but which yielded to fomentations and exercise, and the patient was sufficiently restored in ten days to be discharged.

"CASE IX.—A two-year-old cart colt, the property of her Majesty the Queen Dowager, was admitted July 19th. The operation took place on the following day: the left testis was double the size of the other, and the artery of the cord very large. Having had some reason to regret not applying torsion to this vessel in Case VIII, it, as well as the spermatics, was secured by the forceps, and the hæmorrhage stayed. Very slight swelling of the prepuce took place, and the case was discharged on the 20th.

"I shall refrain from offering any remarks on these cases, as to the advantages resulting from this mode of performing the operation of castration, these matters being so much more ably and fully treated on by our kind friend, the Secretary to the United Veterinary Surgeons' Club, Mr. Daws, in the valuable and scientific Essay which he has laid before the Association, and for which I beg to offer him my best and heartfelt thanks."

J. B. SIMONDS.

MR. DAWS then resumed.—In concluding these imperfect remarks, I beg to observe, that life was given us for many noble purposes: not the least among them is, to encourage a healthy and

enlarged system of mental and moral action—to help on the great cause of social improvement—and, in a word, to do our best in the station assigned us, to benefit our fellow-creatures, of every grade and of every kind, so that when our sun sets it may, for awhile at least, leave some train of useful light behind it. This is our duty and our honour, and not day by day to foster the growth of indolence, egotism, and self-conceit.

The due meed of praise must not be withheld from the worthy Secretary of the Association, who, in letters which he had occasion to write to various members residing in the country, availed himself of the opportunity to solicit their opinion respecting the different modes of castration. The following are extracts from the answers which he received. They are truly valuable, and will be read with much interest. They are given in the order of time in which they were received.

The first is from Mr. Richard Collier, of Dublin:—

"As regards my method of castrating, it is a very simple one, and the particulars of it I herewith transmit to you.

"After securing the horse on his back, I open the scrotum in the usual way, and let out the testicle. I then place the iron clams on the cord, and divide it. This being done, I take hold of a small portion of it with the forceps (embracing the artery, of course), and apply *the ligature.*

"I generally have an assistant ready with the ligature made into a noose, who places it on that portion of the cord which I intend it to embrace, before I apply the forceps. I then draw up the artery whilst he secures the ligature. This I consider the most important part of the operation. This being done safely, I let the animal up, and merely treat him in the usual way. When I operate on horses who are in high condition, I generally bleed immediately after letting them up, and give a *small* dose of aloes, merely to open the body *moderately*. I need not tell you that a *large cool* box is the best situation in which the patient can be placed.

"I have adopted this method now for thirty years, and I certainly have been very successful. However, you have ample means and opportunities of trying it, without risk of any considerable amount of property; and when you have done so, I should be happy to receive a line from you."

Mr. W. Richardson, of Lincoln, thus writes:—

"I received your letter with much gratification; but being just now exceedingly engaged, I have time only to give you a short reply. I will at once come to the subject of your request, viz. *castration*

by torsion. On my commencement in practice here, I operated by torsion upon several colts with very *great success;* and most assuredly, I give the preference to this over every other mode of castration. And why? because it is quickly performed; and the wound having only to suppurate, it quickly heals. On the contrary, in all other methods, suppuration and sloughing of the dead parts from the living take place before they can be properly healed.

"On one occasion, I was operating upon a horse for a gentleman who wished me to use the caustic clams. During the process he broke his back; since which I have never made another attempt at this mode of operating, and have said that I never shall."

Mr. David M'Taggart, of Halifax, next follows:—

"I hasten to acknowledge the receipt of your letter, and am proud to perceive the persevering spirit therein displayed, in the advancement of the interests of the veterinary medical profession. I should be truly an unworthy member did I refuse to reply, to the best of my power, to your questions respecting the operation of castration.

"As far my experience extends, I am favourable to laceration and tortion. As regards Monsieur Thibalt's method of operating on the horse standing, without ligature or cautery, I had the good luck to be allowed to be a spectator of it, at a respectable distance; but he taking the precaution of throwing a sheet over the hind quarters of the animal, that I might not be enlightened as regards his private mystery. I, however, managed to get a peep at the testicle, as he threw it away, although he evidently wished to conceal it; and was allowed to examine slightly the scrotum, after the operation. I fancied, however, that I understood the method which he adopted, and was so sure of it, that I took the first opportunity of castrating a horse in the same way; and I succeeded so much to my satisfaction, that I adopted the same system on the two next horses which I was compelled to condemn on account of incurable disease.

"I should presume, in the first place, that an opiate is given, in order to lull the resisting combative faculties; and in the second place, moderate pressure on the testicles will sufficiently paralyze him to quietness. Other aids may be adopted should these not be sufficient, such as holding a fore foot up on the side on which the operator stands, and twitching the patient.

"The horse is placed against a wall, that he may not recede from the operator, who places his breast against the side of the hind-quarter of the patient, and introduces one hand before and the other behind the thigh. Then grasping the testicles firmly, and twisting

them round a little, until the incision is made through the scrotum, transversely, and near to its bottom, the testicle is pressed out. The knife is then slightly used to scarify the membrane which attaches the epididymus, viz. the tunica vaginalis reflexa, commencing at the anterior or superior end; and stripping or separating it all the way down with the fingers, until the cord is completely detached from the testicle, which is accomplished without much difficulty. The hæmorrhage will be very slight, if any; but, in order more effectually to prevent any, the cord thus separated is twisted round two or three times, and returned into the scrotum, where it remains for a day or so, and may be then gently drawn out and clipped off with a pair of moderately sharp scissars or knife. The hæmorrhage from the horses on which I operated did not exceed a table-spoonful. They were all destroyed the same day or the day following, consequently I had no opportunity of ascertaining future consequences. Any member, therefore, who has sufficient courage to try the experiment on other horses, must take the responsibility. If it is not found practicable, do not blame me another time. I have merely acceded to your request; and at all times I shall be most happy to respond to any request of your's that may be within my power.

"P. S.—I operated some time ago on two boars, in a similar manner, taking the appendages along with the testicles, twisting the cord, and turning it aside with my fingers all the way from the appendages. There was no hæmorrhage. They did well."

Mr. Edward Coleman Dray, V.S., at Leeds, replies in the following manner:—

"According to your wish, I have sent you an account of my method of castration, and I shall be most happy to give you any further information. I thought it would be superfluous for me to enter into any detail, stating the advantages that are derived from the operation, or the alterations it produces on the form of the animal, as those points have been so frequently before you, as well as the age at which the colt should be operated on, &c.

"My method of operating is by ligature.

"I cast the colt or horse, with a common cart-rope. The reason for this is obvious, as the generative organs are better exposed. I like the animal to lie on his back, but rather inclined to the near side. I then proceed to remove the left *testicle first*, by a bold incision through the scrotum, and sometimes through the tunica albuginea testis, with a scalpel. I separate with my fingers the vas deferens from the spermatic cord; a yard of waxed three-thread twine is placed round the cord, and by the aid of an assistant the ligature is pulled very tight and made secure. The testicle is then

removed by a pair of scissars or the scalpel. The ligature should be left long so as to allow six or seven inches of it to project below the scrotum, in order to prevent the external incision uniting by adhesive inflammation before the slough is ready to come away. If the weather is fine, the colt should be turned out in the morning, and taken up again when the sun begins to decline. This plan should be pursued until there is a good suppurative process established; then the colt may stop out altogether, and we have no occasion to take any further notice of him.

"With respect to the time of year at which this operation should be performed, I am perfectly aware that I differ from the generality of practitioners. I *once* had the misfortune to lose a colt at the latter end of the month of April; but he died from want of attention in the owner, and from exposure to cold and wet. I find the warmer the weather is the better the colts do, and I have operated upon many hundreds.

"I prefer the months of June, July, and August; but many will say you then have the flies to contend against. Instead of their doing harm, I always find that they do good. By their biting the animal, he takes more exercise; there is less swelling, and he sooner gets well. The flies hardly remain a moment upon the colt, as he has his tail to brush them off. If you have much swelling, cold and want of exercise are the causes.

"I have operated upon horses at all times of the year. I even castrated a nearly thorough-bred horse, fourteen years old, in last February, when the weather was intensely cold, and snow upon the ground. After the operation, I placed him in a loose box, sufficiently capacious and warm, that he might be exercised in it, and no horse could do better. The ligatures generally come away by themselves in ten days or a fortnight. I maintain that, by this mode, the operation is simplified, and more surgical."

Last of all we have a second letter from Mr. M'Taggart:—

"I have this moment received your kind letter, with the thanks of the Members of the Veterinary Medical Association. Will you be so good as to give them my hearty thanks in return, and assure them that I am much flattered with this expression of their approbation? The circumstance of your writing me some time ago, about the operation of castration, gave me a desire properly to test it. I, therefore, determined to seize the first opportunity, and chance soon granted what my heart desired. A few weeks ago, I met with an entire pony, about fourteen hands high, which I purchased for the purpose; and after keeping him until he got into good condition, I sent Mr. Byron, V.S. of Bradford, and my brother, at

Leeds, notice that I should operate upon him on the 2d of this month. They accordingly came over on the afternoon of that day. About five o'clock, P.M., we went into the stable, accompanied by three more gentlemen, friends of mine, in Halifax; when I performed the operation with perfect satisfaction to myself, and the no small astonishment of my friends.

"The pony has been perfectly hearty since. There was no hæmorrhage, and no swelling of any consequence. I sent him out to exercise on the following day, and I have been riding him the last five days. He is quite convalescent.

"It is not necessary to take away the end of the cord afterwards. I never dressed him after the operation; and I did not give any opiate previous to the operation. I bought him for the experiment, and I was determined it should have a fair trial; and so far I am quite satisfied.

"Of one thing I am certain,—that the profession may be somewhat benefitted by adopting this mode of taking away the testicles, even when the horse is thrown and properly secured. On colts not handled it is not likely that any one would risk the danger of trying it standing; but I think, in whatever way they may deem fit to secure the horse, the principle may be adopted with safety. If we can do without the clams and the cautery, so much the better."

Before the debate commenced, Mr. Wardle was requested to shew to the meeting the hobbles which he and Mr. Simonds were accustomed to use in casting colts for castration.

They consisted of two ropes, to the end of one of which was sewed a leather strap with a buckle attached to it, and to the other another strap with holes pierced in it. At the distance of fifteen inches from these ends the ropes were sewed together by strong waxed thread. When this point of union was placed under the neck, and the ends buckled together, the ropes formed a collar for the neck, and could be slackened or tightened at pleasure. To each side of this rope collar, and somewhat nearer to the point of union than to the buckle and strap, an iron ring was attached on each side, enclosed in a piece of roping.

These ropes dividing under the neck, were brought between the legs, and under the belly, and round the hind legs on each side, and then brought forward outside the legs, and the extremities brought through the iron loops at the shoulder on each side. When every thing was ready, the ropes were gently lowered to the heels, and, running over the hollow of the heels as a kind of pulley, the colt was brought down in an instant by a man on each side pulling at the portion which had passed through the ring.

The operation being ended, all that was necessary was to un-

do the hobbles first at the feet, and then unbuckle the neck-strap. The colt immediately gets up, and leaves the hobbles on the ground.

Mr. Wardle added, that the operator will find these hobbles much more convenient than the rope formerly used by practitioners, and which is still employed by many who are extensively engaged in the castration of colts.

Mr. Wardle then exhibited an improvement in the torsion forceps. In the first instrument, the arch under which the slide passed, by which the forceps were fixed, and likewise the slide itself, were above the level of the arm of the forceps, and the consequence was, that in the turning of the instrument, and the manipulations of the operation, the slide, and especially in the hands of the inexperienced practitioner, would slip from the catch, and the forceps would lose their hold. In Mr. Wardle's forceps both the slide and the arch under which it passes are buried in the shaft of the instrument, and no prominence remains but the nut which is under the command of the operator, and with the action of which nothing can interfere*.

The debate now took a conversational turn, which promised, soon after the commencement, considerable interest, and was, therefore, permitted by the President to proceed.

* On looking over some piles of papers, since he has been able to get once more a little among them, the compiler of the records of the Association has found that he has not done justice to the kindness and the zeal of our excellent Secretary. Mr. Morton took the trouble to introduce, with some appropriate observations, the letters which he had so kindly procured from some of our intelligent correspondents, but of which the compiler says not a word. In fact, Mr. Morton's paper, together with Mr. Darby's excellent letter, had been lying at the bottom of an omnium-gatherum drawer, and there would have lain for years, had not Mr. Youatt, coming once more into his study, begun to rummage its contents. He begs to apologize to Mr. Morton for this apparently but really undesigned neglect. It shall not occur again. To Mr. Darby he would also apologize for giving him the trouble of writing a second letter.

As to the gentlemen whom Mr. Morton addressed, he well says that "he felt much indebted to them for the readiness with which they had answered his communications, and he begged thus publicly to tender his thanks, and he was sure the members of the Association would eagerly award theirs."

He speaks of Mr. Richardson, who first replied to him, as a gentleman "who had formerly recorded some cases of operation by torsion in the pages of The Veterinarian, and therefore from whom he hoped to have obtained a long list of cases in which he had been successful; but in this he was disappointed, as Mr. Richardson had almost entirely relinquished the performance of the operation of castration. The next two—Messrs. Collins and Dray—were advocates for the use of the ligature; and he—Mr. Morton—here expressed his conviction that this mode of arresting hemorrhage was equally as surgical as by the torsion forceps, and he thought more safe."

Mr. Daws begged to observe, that he introduced this operation, not as being opposed to the common mode of castrating either the colt or the adult horse; but as, while it in some degree lessened the pain which the animal endured—a circumstance which should never be overlooked by the practitioner—gave a more scientific appearance and character to the operation, and tended to make a favourable impression on the medical and the thinking man.

An advantage, and a considerable one, was gained by this mode of operating: its superiority over the cautery could not be questioned, as no sloughing of the parts divided in the operation took place; but a healthy suppurative process was soon set up, and less tumefaction of the surrounding substance occurred. Besides, the performance of this operation by an educated and scientific practitioner enables him to attain that position in society to which he is justly entitled, and will assuredly raise him in the estimation of his employers far above the ignorant and uneducated empiric.

Instances of secondary hemorrhage are very rare. Should it occur, the animal must be recast, and the torsion repeated. In the human subject secondary hemorrhage often occurs when the ligatures come away. There is no fear of the like taking place after castration by torsion in horses, for the vitality of the twisted vessel is not destroyed; consequently sloughing of it need not be apprehended.

Should adhesion of the edges of the wound in the scrotum occur, which it seldom does if the wound is made large enough, the introduction of the finger will sometimes be necessary to evacuate the pus lodged within its cavity.

Instances of secondary hemorrhage in the human subject are often attributable to the vessels being in a diseased state. There may be partial ossification, &c.; so that when the ligature sloughs, little or no opposition to the current of blood remains.

Torsion also claims this advantage over the application of the clams—there is no portion of cord firmly included between two pieces of wood or iron, which must necessarily destroy its vitality, and sloughing will be the consequence; neither is there that danger of peritonitis ensuing which the stretching downward and pulling outward of the cord from the abdomen by the clams is likely to produce.

Mr. Simonds.—It was a great thing in favour of this operation that it took but a very few minutes to perform. Generally speaking, in less than ten minutes the colt was on his legs again. In five days or a week the colt or the horse might return to his usual exercise. The tumour was trifling, compared with that produced by the cautery or the clam.

Mr. Jackson acknowledged that he was not so much in love with the torsion as some of those around him seemed to be. He never lost a horse out of many hundreds on whom he had operated in the usual way. During the time that he was in the East India Company's service he never lost a horse by castration: he was, therefore, somewhat inclined to stick to the old plan. He was accustomed to use the hollow clam, charged with sulphate of copper.

Mr. Ernes was friendly to the old plan. He had had sufficient opportunity of putting it to the trial. He recollected a particular instance, in which the operation was performed on a lot of young horses immediately after they were bought. They commenced their journey directly. Not one of them exhibited any unfavourable symptom, and before they arrived at their journey's end they were perfectly well. Indeed, it is the opinion among many dealers, and they who have had full opportunity of judging correctly of the matter, that there is less swelling and less tendency to inflammation than when they are nursed in the stable.

Mr. Hopkins.—Did not Mr. Daws find it necessary to break down the adhesion of the scrotum a day or two after the operation?

Mr. Daws.—Never. He made the opening in the scrotum larger than it is usually made.

Mr. Hopkins did not like adhesion taking place while the suppurative action was going forward.

Mr. Ernes here agreed with Mr. Daws, and thought his mode of proceeding more scientific and less painful; but he would ask, is it necessary that castration should be carried to the strange extent that it is? How much is the strength of the animal diminished, and how many a noble spirit is lost! We daily witness numerous instances of the inferiority of the gelding. He is often beaten out of the field by the mare in strength, endurance, and speed. He could not help thinking that the almost indiscriminate use of it was a cruel and barbarous practice. It is almost peculiar to our country, and it is a disgrace to that country. We never hear of it in the East. There the gelding and the ass are equally scorned. There are few geldings in Italy, Spain, or the south of France.

It is a well-known fact, even in our own country, that the majority of perfect horses are better and stronger and less liable to disease, than when they are castrated, except, perhaps, to a few maladies of an inflammatory nature. He would ask, should it not be abolished like cropping and nicking? and should not gentlemen pause ere they give the indiscriminate order for the emasculation of so many noble animals? Are they so dangerous to have about us, or are we greater cowards than our neighbours? The fact, perhaps, is that in our country the horse is the only animal for agricultural and commercial labour. In other countries the labour is more than divided by the ox. In many parts of the world the horse was bred for the purposes of war, and public and private state, or for travelling: in ours he is the drudge upon the farm and the road; and therefore, although we lose somewhat in his appearance and vigour, he is rendered more useful for common purposes by emasculation.

Mr Twinberrow could not agree with Mr. Ernes in his advocacy of the perfect horse. This strength and speed are not so invariable characteristics of the entire horse as he represents, or, at least, they are allied with other qualities which materially lessen their value. There are instances—they may not be numerous, but they are on record—in which horses have never won a race while they were entire, but ran successfully and well after they had been castrated. What is the use of stallions being more speedy, if they will not answer to the call? and this has been the case with the best of them. He knows more than one that has a decided will of his own, and will fall to biting every thing around him rather than set honestly to work.

Mr. Ernes.—The superiority of the stallion, either in strength or speed, is so universally acknowledged, that he carries additional weight as being a stallion.

Mr. Bowles agreed with Mr. Twinberrow. He had seen several cases in Newmarket, in which certain horses, and on which great bets were dependent, could not be got to start at all, on account of their bad temper. What becomes of the stallion when he is lame? He is often excluded from the most likely and effectual means of cure. There are no fences that will restrain him, if a mare is on the other side. It would appear, therefore, that our habits and customs, and our general modes of managing the horse, are such, that the introduction of stallions among us would be an insufferable nuisance, except in the stables of the sportsman or of private individuals.

Mr. Ernes.—Mr. Bowles is perfectly right as it regards our present system of managing the horse. The introduction of stallions would be inconvenient, if not impracticable; yet go on the other side of the water, and see the management of the stallion there. See five, or even eight, of them yoked to one diligence, with nothing but their previous education, and an apparently strange

and inefficient one, and the management of one man to restrain them; and yet they bowl along the road, and not the shadow of an accident occurs.

Mr. Bowles thought that they were wandering too far from their subject. As to the operation by torsion, he confessed that he saw no advantage in it above any other mode of castration.

DECEMBER 10, 1839.

The President in the chair.

Messrs. J. Gooch, J. Howe, W. Ridgman, W. Wilks, and — Williams, were elected Members of the Association.

The following books were presented to the Library:—

By J. Coleman, Esq., Dictionnaire de l'Art Vétérinaire
By Professor Lassona, Annali de Veterinaria, Nos. 1, 2, 5, 8, 9, 12
— Patologia del Cavallo
— Sulla non esistenza del Contagio nella Peripneumonia
— Della Rabbia
— Dell' Arte, della Ferrature nie Cavallo
— Richerche sue Tetano.

The following letter from Mr. Darby, on "*Influenza in Sheep*," was then read:—

Lowth, Dec. 7, 1839.

Sir,—As a member of the Veterinary Medical Association, I shall be very much obliged by your laying before the members of that Association, if you think it worthy of their notice, the following history of a diseased flock of sheep, &c.:—

On the 8th ultimo, I was called to attend a flock of sheep, consisting of 250 lamb-hogs, the property of Mr. Thomas Grantham, of Donington, six miles from this place.

On going round the folds with the shepherd and master, I was informed they had lost and were losing four or five sheep daily. The shepherd brought three dead ones from the fold that morning, and, on closely examining the flock, I found the greater part to be more or less affected with influenza. The eyes were closed, or partially so; the head very much affected; a purulent discharge issued from the nostrils, and, some hours previous to death a thick ropy discharge took place from the mouth, the stench from which was abominable: a glaring eye, with an inclination to keep forming a circle, was the last symptom; and then death soon closed the scene.

On examining those that had died that morning, the following

appearances presented themselves:—The membrane of the windpipe of a purple colour, and the tube contained much frothy mucus; the lungs were highly congested, as were the vessels of the brain; and inflammatory patches existed throughout the whole length of the intestinal canal. The symptoms were described next day to Dr. Banks, a physician of this place, and he pronounced them to be the most decided symptoms of influenza he ever heard of in sheep.

I commenced my treatment by giving the whole flock four drachms each of Epsom salts combined with vegetable tonics, and, calculating the proper quantity of warm water, we brewed the medicine in the gross, giving each sheep a quarter of a pint of the mixture. I afterwards gave to those that required it small doses of digitalis, opium, tartarized antimony, and vegetable tonics. I am happy in being enabled to add, that, after having given this medicine, I never lost a single sheep, and they are at this moment as fine a flock of hogs as any on the walks. I should have said, when I first saw them, that they were on turnips, and having two ounces each of linseed cake, with barley chaff. I had them removed from the turnips to old seeds for some days, but they are now on their usual keep. Several of them went blind; but by applying sol. sulph. zinc. and tinct. opii they have recovered their sight.

I have lately had a cow patient, the property of the Rev. J. Waite, of this place. He bought her a few days after calving, and during two nights she had been exposed to heavy rains. One morning the man found her without a drop of milk, and incapable of walking; but after a great deal of trouble and many falls he got her home.

When I saw her she was completely paralyzed. I gave her a dose of Epsom salts, with croton seed and ginger, and applied a mustard embrocation combined with turpentine and sal ammoniac over the whole length of the spine. I afterwards gave scruple doses of nux vomica, with the vegetable tonics; and she is now tied up with the other cows perfectly healthy, and yielding her twelve pints of milk each meal.

Mr. Youatt.—I beg leave to offer my sincere thanks to Mr. Darby for the excellent case which has just been read. It was indeed of a serious nature, and the manner in which he combats and conquers it does him the highest credit. I only object to the title which he gives it—Influenza. By influenza I have been accustomed to understand *epidemic catarrh;* a disease which affects not one flock or one field, but prevails over a larger or smaller extent of country—which is not cured by one or two doses of medicine very properly selected and administered, but often bids defiance to the most prolonged and skilful treatment; and which is more fre-

quently to be traced to somewhat careless or improper treatment, as here, with regard to the turnips, which might not be good, and which are always dangerous in certain states of the weather, than to extensive and destructive atmospheric agency. I mention this, and perhaps it is somewhat hypercritical, that, the attention of the student being now about to be directed to every domestic animal, we should learn to call things by their right names.

As for the affection of the eyes, the sheep is exceedingly liable to inflammatory disease of these organs, and especially when exposed to undue cold, whether in the spring or the fall of the year; and cases of partial or temporary blindness occur oftener in the sheep than in any other domesticated animal.

Mr. Evison saw some sheep in the same way, a little before he came up, but they were on grass land. He had an opportunity of examining them, and the symptoms were almost precisely the same, except that costiveness generally prevailed.

The President had had the opportunity of examining the same disease. Both the symptoms during life and the post-mortem appearances resembled those described by Mr. Darby.

Mr. Simonds confessed that he was not accustomed to call epidemic catarrh influenza; and notwithstanding what had been said by Mr. Youatt, our only authority upon the diseases of sheep, he must still be of opinion that these were true cases of influenza or specific inflammation of the mucous membranes. They were probably referrible to the extreme degree of wet that had prevailed; the consequence of this was, that inflammation of an unusual character attacked the conjunctival and pituitary membranes. Thence, by contiguity of surface, the buccal membrane and the lining tunic of the œsophagus participated in the inflammatory action, which presently involved the mucous membrane of the intestines; or, by direct continuity, the inflammation might extend to the larynx and bronchi.

In fact, it was a disease of the mucous membranes generally, and, as he had previously observed, naturally and properly came under the term influenza, being essentially the effect of atmospheric influence.

Mr. Twinberrow had sometimes seen this disease in wet and close weather, and when there was much vegetable decomposition. It was not at all unlikely that the turnips during the early part of the last winter might have produced this or a similar disease.

The President could hardly imagine that many turnips were then going on to decomposition: it was rather too early in the year.

Mr. Twinberrow.—It is well known by the grazier that sheep never do well on turnips in warm and damp weather. This was in the beginning of November.

The debate now reverted to the proper subject of the evening, "Castration by Torsion."

Mr. Youatt rarely felt more pleasure in rising to address the meeting than on the present occasion. He had little individual claim to the honour connected with the introduction of torsion in castration, but he was an humble member of the club in which the project had originated, and by which it had been triumphantly accomplished. It was pleasing to see those friendly associations, that so lately began to exist among the practitioners of the same art, increasing in number and influence. "In these periodical meetings," says a French writer, whose excellent observations he was only waiting for space to introduce into THE VETERINARIAN, "the members of the society begin reciprocally to appreciate each other. The narrow spirit of jealousy which too often actuates the men who practise the same profession in the same neighbourhood, without any friendly intercourse with each other, vanishes before the real appreciation which each is enabled to form of his neighbour, and, without impeding, or injuring, or wishing ill-will towards each other, they all can pursue their course towards their common object. Thus the perfectionment of veterinary science, the high and well-merited consideration in which they are held who practise it, and the true and honest confraternity which binds them all together, are the results which must necessarily follow from well-organized veterinary associations."

Whether the pursuits of science can mingle with the enjoyments of our convivial meetings was worth the trial. It has been tried, and succeeded. The introduction of castration by torsion was the noble result of it.

I congratulate my brother members of this society in the object which they have attained, and sincerely rejoice in the share of not undeserved honour which will descend on every member of the club.

I never subjected a horse to castration by torsion; but, from the moment that the practice of it was attempted by Amusat, I began to put it to the test. At that period I was engaged in veterinary practice, and many a poor bitch was brought to me with enlarged, scirrhous and cancerous mammæ. I obtained a pair of forceps immediately. Mine stood third or fourth on the list of sale, and, on the first trial of them, the ligature was abandoned for ever. The inflammation was less, the wound healed more readily, and I never had occasion to repent the change. Circumstances have once more altered with regard to me, and to the same practice I shall return.

Let my brethren bestow the principal part of their attention on the horse, and in this new mode of operation see that they are promoting the cause of humanity as well as of science! I shall rejoice in their success. In my humbler degree I shall endeavour to tread in the same course, and then our meetings around the festive board will receive a higher zest, and our communings with each other will be delightful and honourable.

Mr. Simonds.—I am perhaps expected to say a few words, being one of the party alluded to. I do confess that I feel myself honoured by being admitted an associate with such friends, in such a cause; and that eventually, in the language of my friend who has just sat down, we shall be found to have contributed, in some slight degree at least, to the cause of humanity and science. I am of opinion that castration by torsion possesses advantages of which no other mode of operation can boast. It needs only to be regarded with an impartial eye, and, compared in its simple but effectual manipulations with any or with every mode of practice, for its superiority to be immediately evident.

[Here a short but beautiful description of the various processes of the operation was given—the exposure and division of the vas deferens—the application of the forceps to the artery, the testicle still being attached to the cord—

the absence of all future sloughing and danger.] This method of arresting hemorrhage (Mr. Simonds continued) is applicable to operations of all kinds, and, proper attention being given so as to make a sufficient number of turns with the forceps, the vessel will never uncoil, nor is the slightest danger to be feared. Every failure is to be attributed to this, and practitioners are now become more cautious, and, therefore, successful.

I will first speak of its advantages, and afterwards compare them with those said to belong to the various other methods of operating. And I would here remark, that, if the veterinary surgeon is anxious to supplant the castrator of the olden day, he must expect to do it only by the introduction of such a plan of operating as will at once convince the employer of its superiority; at the same time, it must be as quick in its performance, nor require more care or attention than he has been accustomed to give in previous cases. I contend that in castration by torsion this desideratum is obtained. In its appearance it is surgical and scientific, and, unlike the caustic clams, it is stamped with humanity. The inflammation which follows is the result simply of opening the scrotum; there is no eschar or ligature to throw off by the sloughing process, there being no foreign agent left in the wound, and consequently all danger of secondary hemorrhage is removed. We require, in the larger majority of our patients, no second visits, in order to see how the case may be proceeding, or to break down the adhesions between the sides of the scrotum, so as to give exit to the confined effusion, and thus to hasten the suppurative process. It takes no longer time to perform than the other methods, and, the practitioner having become *au fait* in the manipulation of the forceps, the bleeding will be at once and safely arrested: hence its value. In saying that its application to this operation on our patients is of recent date, I believe I am not detracting from its value; but its great superiority depends upon the liability of those fatal effects, the result of excessive inflammatory action, being removed. Although somewhat irrelevant, I may, perhaps, be allowed to remark, that Mr. Youatt has found this method of suppressing bleeding successful in the removal of tumours from the dog; and he says that, from the moment he adopted it, he experienced no untoward hemorrhage, and he thought that there was considerably less inflammation. My experience perfectly corresponds with that of Mr. Youatt. The only art is in the separation of the vessel from the adjacent cellular tissue, and the giving the forceps a sufficient number of turns. Should the young practitioner have failed here, and bleeding recommence, let him seize the vessel again and effect his purpose. Generally speaking, the return of the hemorrhage will be in the space of a minute or two, or not at all. For the operation of castration, I have generally found from eight to twelve rotations of the forceps to effect all we desire; and here I am supported by Mr. Wardle, who has operated in double the number of cases, with such success, that he will invariably adopt it; but, Sir, superior as is this plan in comparison with others, it may be long before it is generally adopted; and it should, as it will be, one of the grand distinctions between the veterinary surgeon and the farrier.

The only method of operation that can, in my opinion, vie with torsion, is the ligature, not of the whole cord, but simply of the spermatic artery. But to this there are objections which cannot apply to torsion; for it must not be forgotten that you have still a foreign agent left in the wound, producing irritation; that this must be thrown off by the sloughing process; or, should it be retained, sinuses may form, causing you much anxiety and trouble, and producing dissatisfaction in the mind of your employer. A still greater objection, however, may be urged against the ligature of the artery, and that is the danger of bleeding occurring at the time it is thrown off by the sloughing process. I may, perhaps, be allowed to exemplify this practice by

referring you to a case reported in the "Lancet" of last week (Dec. 7, 1839), where the patient sunk from hemorrhage a month after an operation for subclavian aneurism.

If, Sir, such fatal effects are liable at a remote period to follow castration by ligature, I, for one, should hesitate to adopt it.

The other manner of using the ligature, and which I am told some practitioners have recourse to, is, after having let out the testicle and divided the vas deferens, to apply it around the whole constituents of the cord, embracing the artery, vein, nerve, &c. This to me does not appear a very scientific mode of proceeding; and I cannot divest my mind of the impression, that peritonitis would be as likely to follow this plan of operating, as we well know it is after the use of the caustic clams.

Some among us may be disposed to question this assertion: if so, I cannot do better than refer them to the seventh volume of THE VETERINARIAN, in which is given "the result of the castration of two thousand horses in the French cavalry, in 1830-31," by M. Texier. From the history which he gives of the case, we learn that 200 of the whole operated upon, or every tenth horse, became ill with peritoneal inflammation, and that one-fifth of the number thus attacked died.

Fatal cases are, likewise, in the same volume, recorded by Mr. Thompson, of Beith.

I have said, that castration by torsion does not necessarily require a second visit; but with the clams, either with or without caustic, such attention cannot be dispensed with. In fact, it is part and parcel of the operation when thus performed, which may with truth be said to occupy twenty-four hours before it is completed, the testicles being not unfrequently, by some, left, during the whole of this time, dangling between the poor patient's thighs; which I suppose is intended to shew how much humanity and science are blended together in modern veterinary operations. But suppose this disgusting appearance to be removed, still the practitioner is compelled to see the case within a given time, in order to remove the clams.

I shall only now speak of the actual cautery, which probably is more frequently had recourse to than any other method of operation. Valuable as this plan is found to be in practice, few, I think, will be disposed to extol it in comparison with torsion. All the objections which apply to clams, ligature, &c., may be urged against this mode of operation.

Fearful is the catalogue of casualties likely to follow its use: among which are secondary hemorrhage by the current of blood down the spermatic artery, from the eschar being forced off immediately after the patient is let up. This not only may but frequently does occur. The same risk is run when the eschar comes away by the sloughing process; or should it be retained within the scrotum, it will give rise to the formation of sinuses, troublesome to heal, and frequently having a fatal termination. Scirrhous cord, peritonitis, &c. &c., rank among the sequelæ of this, the plan of the farrier and the gelder.

I will trespass but a minute longer on your valuable time, to revert to torsion; and, that I may be distinctly understood, I would repeat my plan of operating. After having let out the testis, I separate with the finger the vas deferens from the cord. Next I lay bare the spermatic artery, using for this purpose a pair of sharp-pointed scissors; the forceps are now to be placed upon the exposed vessel, and secured by their spring. The artery is next to be divided behind, as it were, the blades of the instrument, leaving within their grasp the portion just secured. The vessel is then to be drawn gently outwards, and the necessary number of twists to be made upon it, after which it may be liberated; and, in the majority of instances, all bleeding will be found to be suppressed. Such being the case, the testicle is then cut away

by separating the cord between it and the part of the vessel which has been twisted.

By this mode of proceeding you are not annoyed by the escape of any blood; and the clams generally used to fix the cord are entirely got rid of—the testicle itself preventing any retraction of it by the cremaster muscle, when the vas deferens has been divided.

In conclusion, I cannot help expressing my firm conviction, that, ultimately, castration by torsion will supersede all the other modes of operating, being simple, safe, and productive of no bad consequences from suppuration or sloughing.

Mr. Mackinder.—How would Mr. Simonds act in a case of scrotal hernia?

The President.—Mr. Simonds has stated, that there are cases in which it may be inadvisable or impossible to use the torsion forceps. This is one of them. He would not operate at all if he could help it, or, if he did, he should lay open the tunica vaginalis, and endeavour to pass back the intestine.

The Patron did not mean to offer any decided opinion as to the value of the newly proposed method of castration, but he would ask, "Do we not find some severe cases, when the artery is put on the stretch, and then retracts and becomes buried in the neighbouring substance, and the hemorrhage is stopped?" No vessel whose integrity has been injured, or whose caliber and power are in any degree interfered with, will suffer the blood to pass readily afterwards. He had twice tried the operation of torsion simply as an experiment. He twisted the cord from four to seven times, and it answered the purpose so far as the stoppage of the hemorrhage went. One, a horse, did very well; but the other, an ass, sunk under the irritation or debility produced by the operation, or some other cause, and was found dead on the following morning.

In this operation you destroy the coats of the artery. You separate them, and take them from their natural situation. Then a considerable degree of pressure is applied. The function of the muscular coat is destroyed, and the elastic coat has its properties impeded. Inflammation is then set up in the continuous line of the displaced and injured parts. If the artery does not untwist, the inflammation may not be sufficient to do any serious injury, and the operation will succeed. The coagulable lymph thrown out will effect the desired purpose.

If practised with skill, the operation may be generally considered as a safe one; but the operator should first pause, and ask whether it is superior or equal to the ligature, which is the next in order, or to the actual cautery, or even the caustic clams, so universally used on the continent, and so safe. It is so rare to meet with a case of death from castration by this plan abroad or among expert castrators at home, that a death is scarcely calculated upon. He was informed by more than one person in the country in extensive practice as gelders, and had been so thirty or forty years, that a death had never occurred to them from simple castration, which had generally been performed upon colts from grass. His advice, therefore, would be, do not be in too great haste to adopt these new operations. You cannot do better than well. He should even be cautious how he interfered materially with the casting of the colt for this purpose. The common method is so simple, and attended with so little danger or trouble, that he should pause before he introduced any very considerable alteration either in the hobbles or the operation.

When he says this, he does not condemn the operation of torsion. Let those who reside in the neighbourhood of large towns adopt it, if they please, on account of its novelty, or the impression it would make on the scientific man. All that he has to say, and especially to those who have not these inducements to run after novelty, is, be cautious. The loss of two or three colts,

let the mode of operation be ever so scientific, may do the practitioner irreparable injury.

He had made some inquiry as to the use of torsion in our metropolitan hospitals. He could not hear that it was resorted to in any cases of amputation. The existence of such a mode of arresting hemorrhage must have been heard of by them all. The surgeon who introduced it could not have laboured quite in vain. It was not adopted by any of them. Therefore, let the veterinary practitioner not be in too great a hurry to adopt a novelty.

He agreed with Mr. Ernes as to stallions and geldings; but, in order to establish the universal introduction and use of them, we must have a very great change in their education, and, perhaps, in the breed of the horse. Here a stallion is kept, as it were, in a box, den, or cell, like a wild beast. In Asia the system is very different; but they begin very early with their peculiar system of breaking and domesticating. The horse in some countries, like our dog, is his master's friend, and the companion of the family. There is a little but no great difference in the mode of feeding, barley being more used than other grain. In our present system it is an act of humanity to castrate the horse, that there may be no contests between him and those who look after him, and no contests about his work, which cannot fail to end in his discomfiture and punishment. There are many stallions in some of our Indian cavalry regiments; but the discipline keeps them in sufficient subjection, while the manner in which they carry themselves adds to the appearance of the troops. They are castrated there when vicious. In Spain the horses are comparatively seldom castrated. A Spanish regiment, but virtually the property of the French, was, for reasons that are not here material, turned adrift on the sea coast. They immediately attacked each other with the greatest fury, and, eventually, scarcely one of them escaped. I give this only as I read it in a history of events during the late war. The people on the continent, however, have the control of their stallions almost as completely as that of their dogs. They are accustomed to the habit of subjugation from their very colthood, and the voice or the whip of their groom is generally sufficient to restore order.

Mr. Simonds had listened to the Patron of the Association with attention and pleasure. He told us that we should be exceedingly cautious in the adoption of new practices, especially where our old manipulations or remedies rarely or never deceived us. He perfectly agreed with him here; but it is new and valuable ground which the advocates of torsion are endeavouring to occupy, namely, the prevention of secondary hemorrhage. In the wards of the hospital, and in the stables of the veterinary surgeon, this is of occasional and annoying occurrence. True, the application of the torsion forceps has been principally considered with regard to the arrest of bleeding after castration. There it has perfectly succeeded. He does not expect that the castrators by wholesale, of whom the Patron has spoken, and of some of whom he would speak with respect, will alter their mode of proceeding. They probably would be wrong if they did; but where can be the objection to a practitioner, differently located, introducing an operation which promises to be as safe as the other,—which has more of humanity about it, and a more scientific character—that character, in fact, which better suits the veterinary surgeon of the present day, and which he should assiduously cultivate? He could not but think that the cautions of our worthy Patron were somewhat too urgently pressed. For his own part, he rejoiced to see the change that had taken place in the veterinary surgeon within the last twelve or twenty years. He trusted that it would progress still more rapidly, and that in his personal character, in scientific attainments, general reputation, and the ob-

ject and character of many of his operations, he might prove himself more worthy of regard and esteem.

With respect to the operation of castration, the dangling of the clams, and, even, of the testicles too, four-and-twenty hours together between the horse's legs—it was a most abominable practice.

The President.—This is not now generally done: it is not considered to be by any means necessary.

Mr. Simonds.—It is, however, not many years ago since the practice was not unfrequent, and even among those who held themselves somewhat high in the profession.

He was inclined to think that our Patron had been somewhat misinformed with regard to the use of the torsion forceps in hospital cases. He did not believe that they were resorted to in hemorrhage from larger vessels, or that the result of any important operation was suffered to depend upon them. The confidence of the surgeon had not yet reached this extent, but he had been told that they were, perhaps slowly, becoming more popular—that they were not unfrequently used in securing smaller vessels, and for this considered as more readily applied, more humane, and more to be depended on.

The President thought that great credit was due to Mr. Daws for the manner in which he had introduced this interesting subject, and he admired the zeal which the advocates of this novel mode of performing the operation of castration manifested in its defence. He was a member of that club whence this Essay, under the able superintendence of their Secretary, had emanated; he, however, claimed the privilege of entering on this discussion, as on others, free, and unfettered by any friendly associations. He peculiarly claimed it on this occasion, as he should have, in some degree at least, to oppose the opinions of those whom he cordially esteemed and valued. In performing an operation, the first consideration of the operator should be the safety of his patient; he should then reflect upon the pain he is about to inflict upon him, and the probable time of his ultimate recovery. Most surgical operations are attended with more or less pain, and many with considerable risk to the life of the animal: let us see, then, the criterion to which this and every other operation should be brought. In all serious operations there will, probably, be some large arterial trunk to be divided and secured; and then will arise the question which more particularly bears upon the present subject. How is this to be accomplished most readily and most securely, at the moment, and so as to prevent immediate and guard against secondary hemorrhage? The means which had been used, and generally with success, were the ligature, the cautery, and, occasionally, compression. To these another has lately been added, namely, torsion, which, being of recent date, and employed by some practitioners in serious cases, it is necessary that its merits and demerits should be thoroughly and impartially investigated. The advocates of performing castration by torsion of the spermatic artery had certainly been very happy in their selection of an operation wherein such an instrument was admissible; for he should say that the spermatic, of all other arteries in the body whence fatal hemorrhage would be likely to ensue, was the best adapted to be converted into a knot by such means, and this arising from the length of the vessel, which may be laid bare without inflicting much injury to the adjacent tissues, and the thinness of its coats, as compared with other arteries of the same caliber.

His friend had come before the Association well prepared with strong and unanswerable facts, unanswerable so far as they go. He believed that every circumstance connected with them, as related by Mr. Daws, had been subjected to the test of practical experiment, and might, therefore, be fully relied on.

They have likewise given us a most commendable proof of their honest search after truth, by relating the unsuccessful cases; which are valuable, inasmuch as they are calculated to impress upon our minds the importance of the caution which should at all times be exercised in the performance of a surgical operation: he doubted not that future good would result from them. It appeared in one instance, that the turns of the vessel had not been sufficient; it had uncoiled itself, and subsequent hemorrhage ensued: in another the cord was too short to admit of the use of the forceps. He would ask, would the flow of blood have taken place in the one case, and the difficulty of performing the operation have occurred in the other, if either the ligature or the actual cautery had been used? He should say, no. Yet it was his opinion, that where torsion could be employed successfully, it should always be had recourse to in preference to the ligature or cautery, as it was attended with less pain, and not necessarily followed by the sloughing process. It, however, was only available in certain cases: it could not be confided in if the artery possessed great thickness and elasticity; and most certainly it could not, if the thickening of the coats of the vessel was the consequence of disease, for in the former case it would be liable to uncoil itself, and in the latter to rupture, and thus the hemorrhage would be renewed: but in the removal of tumours, where the arteries are not very large or diseased, they will readily admit of torsion, and it may generally be resorted to with success. The operation of castration, however, is that for which it is now advocated, and on which our friends are most sanguine of success. They inform us that it is easy of application, and, with a little care, perfectly to be relied upon. Only slight inflammation of the neighbouring parts ensues, no sloughing process or after hemorrhage takes place, nor, since the unfortunate case alluded to, has any accident occurred. He could admit all this as coming from those individuals who had tested it by practice; and his own experience in this mode of operating, in a great measure, tended to confirm these statements: he therefore must say, that he considered the introduction of torsion into veterinary practice, as a means to prevent hemorrhage from arteries in the performance of certain operations, was an important desideratum; yet he thought, that in the operation of castration there was a fear of its not being always so performed as permanently to stop the bleeding. It was his opinion, that too much nicety, skill, and confidence, were required to admit of its being brought into common practice: upon this ground only it was that he gave the preference to the ligature or the cautery.

DECEMBER 17, 1839.

The President in the Chair.

Messrs. Dycer and Brown were elected Members of the Association.

Mr. Daws produced the ruptured stomach of a horse that had died on that day. The animal had for a considerable time been subject to frequent attacks of spasmodic colic. He had known him about twelve months, during the whole of which period he had been subject to these attacks, and he had treated him in the usual manner by the administration of various internal stimulants and anti-

spasmodics. When he was not labouring under these attacks, he was, nevertheless, in a very irritable state. He had been inclined to have attributed the illness of the animal to his having been habitually kept short of water, which he ascertained was the case. To-day he saw him in articulo mortis.

He never beheld so great a degree of inflammation as existed in the stomach. There was some obstruction in the small intestines, with marks of chronic inflammation. In the early part of the day he had made various attempts to vomit. This is a peculiarity attending a ruptured stomach. No medicine is likely to produce this, or will do it. The doses usually administered were 2 ounces of spirit of turpentine, or 1½ ounce of spirit of nitrous ether. This would not account for the inflammation which here extended through the whole course of the intestines. No medicinal agent was administered by any other person. He had not been at work for the last three or four days, until the one preceding his death, and the spasms had usually occurred when he was at work, and kept short of water. The cæcum was so thickened as to have the appearance of leather, and was much contracted. The peritoneum shared in the inflammation of the other membranes.

The Secretary.—His first impression, from the appearance of the morbid parts, was, that it was a case of slow empoisonment. The thickening of the stomach and intestines had very much that character, but this was impossible, as the case had been, from first to last, under Mr. Daws's eye. It must be the result of periodical attacks of inflammation connected with work and the deprivation of water.

It would be in the recollection of some present how nearly this case resembled one entered on the records of the Association during the last year. There, however, the symptoms of the disease simulated an affection of the urinary organs. Through the kindness of Mr. Daws, he had seen the present case some time since, and he remarked to him the closeness of the resemblance.

Mr. Daws.—The general appearances and symptoms were analogous, but there were some points of difference,—the spasm of the bladder, and the continual attempt to void the urine. Sometimes he had introduced his hand into the rectum to endeavour to ascertain the state of the bladder. He had never passed the catheter, for there was too much danger attending its introduction, the horse being vicious and spiteful when suffering much pain.

The President.—The difficulty of voiding the urine was from the pain of the abdominal muscles called upon to assist in expelling the urine from the bladder. There is not so much in man, from his erect position; but in the horse, from the horizontal position of the body, there is always much exertion of the abdominal

muscles, in order to assist in the expulsion of the urine from the bladder. In order to avoid the pain which this caused, the animal retained his urine until the bladder became paralyzed from over-distention.

Mr. Daws.—There was not the slightest appearance of inflammation of the bladder.

Mr. Twinberrow.—Was he not very constipated?

Mr. Daws.—He was habitually so, unless he had bran-mashes.

The following Essay was then read, on the

FORMATION, STRUCTURE, AND DISEASES OF BONE,

By Mr. ALEXANDER BOTTLE, *jun.*

Gentlemen,—In thus making my appearance before you, I confess that I feel some apprehension lest I may not be able to introduce sufficient new and interesting matter to render my Essay worthy of your consideration: yet I do hope that you will accept the will for the deed; for, believe me, that I have been induced to intrude on your valuable time from a motive that you will not fail to appreciate,—the wish to make some little return for the advantages that I have derived from the numerous discussions of which I have been permitted to be a reader or an auditor; for, long before I commenced my pupillage at this Institution, I began to derive improvement from the meetings of this Association. I deeply felt a twofold obligation, first, to the members of your council for the liberality which they have evinced in allowing publicity to be given to your proceedings; and, next, to the Editor of THE VETERINARIAN, for the faithful manner in which he has reported and disseminated them, not only among the veterinary profession in our own country, but in every other in which veterinary medicine is cultivated as a science. I am confident that every member present, and all who have lately belonged to us, will join with me in thanking those gentlemen who first laid the foundation of this Association, and are now the pillars of its support.

These few preparatory remarks will be received by you in the spirit which has given rise to them. May harmony and good feeling prevail among us as they have hitherto done, and the object of every veterinary pupil and student be unity and science!

I have stated that my aim in this Essay will be an elucidation of the formation, structure, and diseases of bone. I shall restrict myself, however, to the horse, although the principles I shall lay down are applicable to the ossific tissue of almost every other animal.

The exterior form and appearance of bone are so familiar, that I

need not enter on any description of them. They are the only parts of the frame to which the appellation of solids strictly applies, although, in anatomical language, this term is extended to every part of the body that does not fall under the denomination of a fluid. Bones constitute the basis of the animal frame, and are admirably adapted for the offices which they were intended to perform, namely, to support and defend the more delicate and vital parts of the body, and to serve as fulcra or levers upon which the muscles may act—thereby enabling the horse freely to move every limb, and to transport himself from place to place with a degree of velocity far exceeding that of most other animals. The bones are the most permanent and unchangeable parts of the animal machine. We see them exposed to heat and cold, and moisture and drought, undergoing little apparent change, and they remain for ages the memorials of the dead, or testifying the existence of other races of animals that have long since passed away. From this we are sometimes apt to conclude that, even in the living body, bones are almost unorganized, and scarcely possess any life, and are not liable, like the softer and more vascular parts, to disease and death; but a little anatomical knowledge dispels our error, and unfolds to us their real and complicated and beautiful structure. It shews us that they possess myriads of vessels as full of the vital fluid as the most succulent and fleshy parts, and having, like them, arteries and veins, and nerves and absorbents, and their periods of deposition and absorption, of growth and of decay.

The formation of bone has given rise to many speculative and erroneous theories. It was once supposed that a bony juice was secreted by the vessels of the part, and which passed through all the successive changes from a thin uncoagulated fluid to a transparent and elastic cartilage, and then to a soft and flexible bone; and, lastly, by a process of slow evaporation to a hard and perfect bone, depending little or not at all on its membranes for its growth or for its nourishment in a perfect state.

Subsequent to this, Du Hamel, having observed that the wood of a tree was formed in successive layers by a process of secretion from the bark, supposed that bone was also secreted from its periosteal covering. He adduced many plausible experiments in proof of the theory which he advanced, and these, with very considerable tact, he apparently made to prove every thing he wished.

At length came Haller, who, superior to every theoretical delusion, set himself honestly to work in the investigation of the processes actually adopted by nature in the production of bone. In this investigation, a succession of simple and beautiful phenomena presented themselves, which had hitherto been unnoticed in the animal economy. The periosteum, in its early state, seemed little

more than a loose tissue of cellular substance, and without the appearance of bloodvessels, adhering to the processes, while it scarcely touched the body of the bone—its principal office being to bound the growth of the cartilage, and to give it form. The bone gradually grew and became vascular, and had a free circulation of arterial fluid, and then, and then only, the periosteum began to carry red blood.

Soon after this it was clearly proved that true bony tissue began to form in small nuclei, in a situation far removed from the surface where it might be assisted by the periosteum, even in the very centre of the cartilage, and that it was secreted there by small arterial vessels. I venture to express my conviction that every artery in the frame is, under certain circumstances, capable of secreting bone, for we often see ossific matter deposited in the ligaments of joints, in tendons, even in the large mesenteric artery, and, occasionally, in the heart itself.

At an early period of the embryotic existence, the whole fœtus appears to be a mere gelatinous mass, and the primary rudiments of the bones seem little more than a transparent and tremulous jelly. In process of time they become of a cartilaginous nature, but no opacity, no symptom of ossification is to be discerned. This cartilage is never hardened into bone, but is from the very first an organized mass. It grows with the fœtus, and has, developed upon it, all the various prominences that characterize the bone which succeeds it. It has also its vessels, which are at first transparent, but they enlarge. In process of time, the red colour of the blood is to be detected in them; and from that period the ossific deposit commences. The first symptom of ossification is usually the trunk of a minute artery running into the centre of the cartilage. This is speedily succeeded by another, and another still, until a plexus of vessels is formed, in the centre of which the ossific secretion is most evident, and whence it radiates in all directions.

The once transparent and flexible cartilage now becomes opaque and brittle, and the small ossific nucleus may be easily distinguished by its grittiness under the edge of a cutting instrument.

The first ossific nucleus is quickly followed by others in different parts of the same bone, all of them slightly dependent on the cartilage, and separable from it by maceration. In their early stage they are of a bright red colour, and are highly vascular. They gradually change to a yellow hue, and ultimately assume the colour and structure of perfect bone. This change of colour and appearance does not depend on any obliteration and absorption of these arteries as soon as they have completed their original function, the formation of bone; but, in reality, their labour ends only

with the life of the animal, for before they have perfected the bone, those busy, meddling, yet highly necessary agents—the absorbents—are at work on it.

Professor Coleman used to compare the absorbents to a set of industrious workmen, at labour night and day, and requiring the utmost zeal and exertion on the part of the arterial system to repair the ravages which they are continually committing.

How, then, do we account for this change of appearance which has just been described? Nature is an economist. She is continually adapting her means to the particular end which they may be called upon, from time to time, to accomplish; and so it is with these vessels. They are no longer required to perform the labour which used to be exacted from them. The quantity of fluid which used to permeate them is materially lessened. They, consequently, become diminished in their caliber; but there they still remain, ready again to assume their active employment, should injury or disease require it.

I have frequently observed that bones, participating in the inflammatory action that was going forward in neighbouring parts—as the bones of a foot labouring under acute laminitis—become as highly injected with red blood as they ever were during their formation. This proves that the vessels were not obliterated, but waiting their proper time to act.

I shall only further remark on the subject of ossification, that its immediate cause is unknown: but its general nature may be considered as analogous to those operations which we usually ascribe to the function of secretion, the arteries possessing the power of separating particles already existing in the blood, and appropriating them to some specific purpose, or of forming new combinations which may be afterwards separated and employed in different ways.

The power with which the animal constitution is endowed of repairing bones when injured, is, perhaps, as wonderful as the process which produced them; and it exhibits in a more remarkable manner the mutual adjustment of its powers, and the adaptation of them to peculiar circumstances. If a bone is completely divided, not only will its fractured ends become speedily united again, but, even after a considerable portion of the bone has been removed, a new piece is generated to supply the deficiency, although it does not, perhaps, assume the symmetrical form and structure of the original bone.

The development of the osseous system is remarkable for the length of time which it requires for its completion. In the human being it is not perfected until about the twentieth year; but in the horse the process is usually effected in a little more than a fourth

of that period. This, however, will vary according to the circumstances in which the animal may be placed, as it respects temperature, diet, &c.

The growth of a bone is a common but inappropriate expression. The change which is taking place in the ossific structure from the time of birth to that of maturity, is not by the osseous matter being squeezed into the interstices of the bone which already exists, and thus, by distending and separating the parts, increasing its size, but by a gradual deposition on the surface of the old bone, in those places in which it was intended to be increased in bulk. This was proved by the well-known experiment of John Hunter on the femora of two young growing animals.

During the early period of life, the cylindrical bones of the extremities consist of three distinct parts united by cartilage, and covered by the periosteum—the body and epiphyses—which appear to have been formed separate, in order to afford six distinct surfaces for the ossific secretion, where, otherwise, there could have been but two. By this means the long bones are enabled to keep pace with the shorter ones, and present to us during every period of life that beautiful uniformity of appearance which everywhere distinguishes the works of the Creator.

The articulatory surfaces of bones are covered by an elastic cartilage, for the purpose of preserving them from fracture by the concussion which otherwise must have taken place at almost every movement. This cartilage differs from that in other parts of the body. Instead of being covered by a dense fibrous perichondrium, it has a thin synovial membrane, which secretes a fluid to lubricate the joint.

THE STRUCTURE OF BONE.

Malpighi first taught that the basis of bone consisted of an animal matter, the substance of which assumed a cellular appearance: but to *Herissant* we owe the discovery of the calcareous matter upon which so many of the specific properties of bone depend. He says, that bone is essentially composed of two substances,—a cartilaginous base or parenchyma, which gives the general form to the part, and a peculiar earthy matter, which is deposited in this parenchyma, and is the cause of its hardness. These two substances are held together by mechanical and not by chemical agency, which is easily demonstrated, 1st, By digesting a bone in dilute hydrochloric acid. The earthy substance will be dissolved, and the soft and flexible cartilage will remain of its original bulk and shape. 2d, If a bone is subjected to calcination, the animal substance will be dissipated, but the earthy matter will

remain of the same shape and size, but rendered so brittle that it breaks with the slightest touch.

The generally received opinion of the present day is, that bone, like the softer solids, is composed of lamina or plates, which are connected together so as to form, by their intersection, a series of cells irregular in size, and in which the earthy matter is deposited. Bichat denies the existence of the laminated structure. He maintains that the experiments are fallacious, and that their apparent result depends on the manner in which the bone has been treated by the operator. The fact, however, is that bone is composed of these laminæ, arranged in the manner which I have already described.

It may be satisfactory to place this in another point of view. What are the appearances presented on dividing a bone longitudinally? It does not possess an equal compactness throughout. Externally it is hard and compact; internally it is cancellated or spongy. In every kind of bone this is observable to a greater or less degree. In the long bones it is beautifully exhibited.

They consist of a hollow cylinder, compact externally, and gradually assuming a reticulated character towards the centre, varying, however, considerably in different parts of the same bone. In the shaft or body, where the bone is most contracted, it is hardest and most compact; while the extremities are expanded, and composed almost wholly of cancelli, with only a thin crust of compact substance.

The flat bones consist of two tables of the compact substance, with a layer of the spongy material termed diploe interposed. In the large bones of the extremities this structure is seen to the greatest advantage. There is a considerable hollow space left, which is filled up with numerous membranous cells, containing a peculiar animal oil called medulla, respecting the use of which numerous opinions have been advanced.

Boerhaave and Haller believed that the oil was secreted in the centre of the bone, and allowed to percolate its pores as it was required, in order to render it less brittle. This, however, was both anatomically and physiologically erroneous, for the medulla is lodged in separate cavities, and not mixed up with the earthy matter, or diffused through the substance of the bone generally.

The prevailing theory of the present day is, that the medulla is a nutritive substance laid up under favourable circumstances, and at convenient times, until the constitution may want it. In my humble opinion, however, this is not the purpose for which it was designed. Although it may become partially absorbed to support nature when an animal is labouring under privation, yet it is to a very slight extent. To whatever extent the animal may have fallen away, however the fat and the muscular parts may have

been sacrificed to support the exigencies of nature, there is always a considerable quantity of marrow in the hollow of the bones.

I believe that it is, partly at least, given to support or prevent the concussion to which the lower extremities of the horse are so exposed. It may, at the same time, confer a congenial pressure upon the bloodvessels within the body of the bone, and by this means effect in them an increased circulation, when they are called upon for unusual exertion. Mr. Howship says, that, by means of the solar microscope, he has detected in cylindrical bones numerous transverse canals, in each of which he has discovered an artery, a vein, and a delicate membrane containing an animal oil which communicates with the cells in the interior of the bone, and which he imagined was for the purpose of admitting the bloodvessels to enlarge, when labouring under inflammation or diseased action.

Bones are every where covered by a thick membrane called periosteum. It is formed of many condensed layers of cellular tissue, which pass into the numerous pin-hole-like orifices upon the surface of the bone, and thereby enable it to give a firm attachment to muscles, tendons, &c., and also afford a ready means for the protection of the numerous nutrient vessels and nerves which are proceeding to and from the substance of the bone, and likewise to form a kind of protection for the bone itself.

THE DISEASES OF BONES.

These are not by any means so numerous in the horse as in the human being; they are, however, serious and frequent. The bones of the horse being organized in the way and to the extent which their function requires, they are enabled to repair the effects of many an injury, but they are also exposed to disease and death. When *necrosis* or death has taken place in any part of a bone, which it may from wounds, contusions, and various other causes, the dead bone immediately acts as a foreign body, and stimulates the absorbents to remove as much of the living bone as forms any union with the dead bone, and by this means it becomes detached, and removes itself, or may be removed. This process is called exfoliation. It is first set up by nature, and it becomes us to watch over and to hasten the process by the application of proper agents. If the powers of the living bone are not sufficiently active to loosen and to cast off that which is diseased, they will soon become diseased themselves.

CARIES.

This is a disease of the bones analogous to ulceration of the soft parts. It differs from necrosis, inasmuch as the vitality of the

bone is not destroyed; but, on the contrary, it becomes highly sensitive. It is rarely in the horse the result of constitutional causes.

It is characterized by a loose fungoid growth upon the diseased bone, which is exceedingly sensitive, bleeding from the slightest cause, and emitting a dark-coloured and very offensive discharge, sometimes mixed with blood, and which quickly tarnishes a silver probe if introduced into the sinus.

The treatment indicated is to endeavour to produce a change in the diseased action by the use of local stimulants, and thus restore the bone to its natural healthy state; or we must, by the application of the potential cautery, destroy the diseased portions altogether.

ANCHYLOSIS.

This may be defined, the morbid ossific union of the articulatory extremities of two or more bones which had previously formed a natural joint. It is the effect rather than the cause of disease. It is produced by inflammatory action set up in the synovial membrane or cartilago-ligamentous substance of a joint, and which terminates in an absorption of the healthy uniting medium, and a deposition of bony matter, by means of which the joint becomes strengthened at the expense of its elasticity and motion. We have frequent specimens of this disease in the bones of the hock and knee joints, and also in that part of the skeleton which is by some erroneously denominated the spinal column.

As to the treatment of anchylosed joints, I must confess that I know not of any mode by which we are enabled to remove the morbid ossific deposition which has once taken place in them. It frequently happens that the inflamed vessels are not satisfied with merely uniting the articulatory surfaces of a joint, but they pour out a quantity of bony matter externally, which becomes a great eyesore and a frequent cause of lameness. This will more properly fall under the next division of our classification of diseases of the bone, viz.—

EXOSTOSIS.

This is a term applied to any unnatural protuberant growth upon the surface of a bone. The horse is peculiarly liable to it. In human surgery there are said to be four distinct species of exostosis, viz., fungoid, cartilaginous, medullary, and periosteal. It is the latter to which the horse is most predisposed.

The periosteal envelope of bones, when in health, possesses but a low degree of sensibility; but when labouring under inflammation it becomes, like bones themselves, painful in the extreme. This is owing to its dense inelastic structure being unable to yield to the

distention of its vessels, and producing that tumefaction which affords so much relief to the inflammatory pain of the softer parts.

When periosteal inflammation is once excited, it almost invariably terminates in exostosis. Hence it is that the limbs are so frequently the seat of it, they being more exposed to blows and injuries than other parts of the frame; while, from the violent exertion which is too frequently required from the horse, the joints of the extremities are too frequently the seat of inflammation and anchylosis. It is also frequently the case that the inflammatory action which is first excited in the synovial membrane, or the cartilago-ligamentous substance of a joint, extends to the periosteum in its immediate neighbourhood, producing exostosis.

Splent and spavin are diseases of this description. The former is anchylosis of the cartilago-ligamentous joint, between the smaller and larger metacarpal bones usually found on the inside of the leg; the latter is a similar disease existing between the small cushion-bones, as they have not unaptly been called, of the hock, and usually commencing, so far as my experience has gone, between the ossa cuneiformia magnum, medium and parvum. I have never seen any specimen of anchylosis of the large and small metatarsal bones distinct from disease of the cuneiform bones, while I have seen several specimens of disease between the cuneiform bones, in which the metatarsal bones have not been in the least implicated. I do not consider it as impossible for disease to originate between the metatarsal bones and to be confined to them, but I have never seen it.

The reason why we do not meet with disease between the metatarsal bones so often as between the metacarpals, is to be traced to the difference in their articulatory arrangement. The small internal metacarpal bone is receiving and has to support the whole of the weight transmitted to the os trapezoides, while the internal metatarsal bone of the hind extremity is only receiving a portion of the superincumbent weight transmitted to the cuneiforme parvum, which is not placed in a position to receive an equal degree of pressure with the trapezoid bone of the knee.

It will also be evident, from the mechanical position of the limbs as pillars of support, that they cannot be receiving an equal share of the weight of the animal. This inequality is considerably increased when the horse has to carry his rider. It is on this account that we so often find the anterior extremities worn out first, and hear the expression, that "he would be a capital horse if he had but two new fore-legs."

The treatment of exostosis must depend materially on its seat. The operation of periosteotomy, introduced by Professor Sewell, is decidedly the most scientific and the best that I am acquainted

with, but it is not always admissible. Who would be so bold as to attempt to cut down upon an anchylosis in the neighbourhood of a joint! Who would hazard the possibility of a wound in a synovial membrane! Here it is that the instructed practitioner has the advantage over the empiric. We must occasionally look around for other curative means, and there are plenty within our reach. We have setons, blisters, the compounds of iodine, and the firing-iron. Should the protuberant growth be very large, and interfere materially with the action of the tendons, we may, perchance, though the times are few and far between, find a useful instrument in the chisel or the saw.

Thus, Gentlemen, have I ventured to enter on a subject replete with interest. In your hands, and in the discussion that will take place on it, something valuable cannot fail of being elicited. I am fully sensible of the deficiencies of this humble Essay. I look to you, and, possibly, by our united efforts we may contribute to the advancement of veterinary science.

The President observed, that the excellent paper of Mr. Bottle would afford ample matter for pleasing and useful discussion. The account which had been given of the theories entertained on various points would be read with interest and advantage hereafter in the closet; but the history of the diseases of the osseous tissue in the horse would afford materials for present debate, which he doubted not would be conducted with kindly feeling and mutual advantage.

In reply to *Mr. Twinberrow*, *Mr. Bottle* said, that the process of ossification usually commenced about the second or third month of utero-gestation: but there are no particular signs of it at this early period. The commencement of the process consists in the deposit of certain minute nuclei in the centre of the future bone. These nuclei could at first be seen only by the aid of a microscope, but by degrees they became visible to the naked eye.

To *Mr. Hubback*, who inquired why the bone died after losing its periosteal covering, he answered,—because its medium of support was removed. This membrane afforded the only means that it had of receiving nutriment. All the vessels go to it, nor can any portion of it be removed without diminishing the amount of nutrient material sent to the ossific tissue.

To *Mr. Twinberrow*, who asked whether, in the operation for bony exostosis, he did not think that, after this membrane was divided and a seton inserted, a portion of bone, and also of periosteum, was absorbed, and whether the death of the bone might not arise from exfoliation, he replied, that he had never seen this.

To *Mr. Bowles*, who asked whether exfoliation would not be the consequence of dividing or destroying the periosteum, he replied, that he did not think it would be a necessary consequence. What then would he say to the removal of splents by excision? To this and other questions Mr. Bottle replied:—Exfoliation does not happen in one case in fifty. He considered that the power of absorption was not usually taken sufficiently into account. This process particularly exerts its influence over newly-formed bone. He did not think that the exostosis produced by injury was of the same character as healthy bone. It had in it more of earthy and less of animal matter—

there was not the density of structure of healthy bone; hence, perhaps, the quickness of its growth, and the readiness with which it is often absorbed. There is likewise less earthy matter in diseased than perfect bone. In young subjects there is more animal than earthy matter; hence the frequency and the size of exostoses in them. He had, however, never analyzed the different bones in order to ascertain whether the same principle equally prevailed in all; he therefore spoke conjecturally.

As it respected the treatment of ring-bone, that would depend on the situation. If it were close upon the joint, he would not divide the periosteum. This disease might arise from concussion, blows, or any thing that will set up inflammation in the periosteum.

To *Mr. Fisher*, who inquired whether the ossific matter was earlier supplied in the flat bones than in the long, he replied that the flat bones seemed to be the last to which it found its way. In answer to a question from another gentleman, he said that he was always cautious of dividing the periosteum, and never would do it in the neighbourhood of a joint. It was objected to him, and particularly by *Mr. Mackinder*, that horses *cutting* often deeply divided the periosteum, and that the occasional consequence of this was severe injury and anchylosis of the joint. He answered, that he did not think a blow of this kind would cause a division of the periosteum, although a blow might be followed by the consequences stated.

Mr. Sibbald.—Ulceration as well as adhesive inflammation might proceed from a simple division of the sound periosteum; but if the bone was sound, the consequence might be simple adhesive inflammation. If the bone was unsound, there would be ulceration, more or less rapidly spreading—more or less extensive, according to circumstances. It might seem a simple question, but he would ask *Mr. Bottle* what he meaned by "adhesive inflammation."

By adhesive inflammation *Mr. Bottle* meaned union by the first intention. Lymph is thrown out from the opposed surfaces, which ultimately unites and becomes organized. In the ulcerative process, you have the formation and secretion of pus. Granulations in due time make their appearance—they unite, and thus the edges are brought together: suppurative inflammation would, perhaps, be the proper term for this.

The President considered that there existed an hereditary predisposition in some animals to throw out bony tumours. He had frequently divided the periosteum in cases of splent, in horses that were not possessed of any superior action, and while there was yet considerable inflammation about the part. Yesterday only he operated on one, both above and below the tumour, and then inserted a seton, in order to produce suppuration. If splents are but recently formed, and, although ossified, yet somewhat soft, merely cutting down upon them is sufficient. The suppurative action is thus induced, in order to direct the current of blood, and to guide it rather to the formation of pus than of morbid bone; for if this were not the case, he might, instead of producing absorption of the tumour, bring about a rapid increase of it.

He did not wish to excite the risibility of the audience too much, but he must, although very far from being one of the old school, remind them that there were such instruments as a chisel and a saw, and very useful instruments they occasionally were. The old farriers used now and then to chisel off these splents; and no bad practice either, if done with judgment and skill. He was not ashamed to confess that he has used these instruments. It was in a case of osseous tumour on the posterior maxillary bone, and that had become a great nuisance. He cut down upon the excrescence, and sawed off a portion as large as his fist. Thanks, however, to the perseverance of our worthy Secretary, the introduction of the compounds of iodine will go far to

drive most of these operations out of the field. It was little contemplated, a year or two ago, that we should have these untractable substances so much under our controul.

Mr. Twinberrow.—In the commencement of an exostosis the horse is lame; but although the tumour continues to grow, the lameness decreases, and often disappears altogether. How can this be accounted for?

Mr. Bottle.—It is some time before the parts can adapt themselves to the change which is taking place. The bloodvessels are gorged, and the irritable membranes are pressed upon in every direction. The nerves partake of the disturbance, and their irritability is increased: but by and by the grand principle of nature, that of accommodation to circumstances, begins to act—the membranes become accustomed to the new pressure—the nervous fibrils lose a portion of their irritability; they both also lose a great portion of their sensibility—they become of a bony consistence, and then, of course, all feeling ceases.

To questions relating to the rapidity or slowness of the ossific process he stated, that this depended on the situation—on the tendency to inflammation, and to various circumstances of which it was impossible for him to speak. It might require from a month to a twelvemonth to complete the growth of a single tumour. As to the removal of some of these bony deposits, it may be done mechanically. For instance, portions of ossified cartilages—connected with quittor—it is the best practice to remove them mechanically and bodily. To the question whether a horse with ossified cartilages was sound, he said that there was some difficulty of replying. While the inflammation was going on, there would be some degree of lameness: but, the inflammation having passed over, there being no longer heat, tenderness, or lameness, and the horse being intended for slow work, he should not have much hesitation in passing such a horse. He would, however, always point out the circumstance to his employer.

The President.—The peculiar subject to which Mr. Bottle's attention had been directed was a most important one. It was sometimes a matter of considerable difficulty, in cases of this kind, to avoid putting to hazard the interest of our employer, and at the same time do no injustice to the seller. It is always a difficult, but certainly a very important, matter to ascertain the date of these excrescences or changes of structure. We are frequently deceived on this point. He has often observed in inflammation of joints, and where the horses have died or been killed in less than a fortnight after the accident, that ossific matter to a very great degree has already been deposited, and that it has so extended as almost to anchylose the whole joint, whether it were the hock, or the pastern, or almost any joint of great action. A veterinary surgeon, who, on examining a horse, finds an exostosis almost anywhere, should be careful how he gives an opinion as to the length of time that it may have existed. He believes that the general impression is an erroneous one—that the exostosis is of far more recent date than it is usually supposed to be—and therefore the probability of lameness from a little over-work, or even without that, is greater than is usually imagined. He would appeal to his friend Mr. Daws on this point. Few men have had more experience.

Mr. Daws perfectly agreed with the President. He thought that few practitioners seemed to be aware of the occasional rapid growth of some of these exostoses, and of the deceptive character which they assumed. He had particularly been struck with this when examining the numerous cases of ossified cartilage which came under his notice. The change from cartilage to ossific matter is sometimes exceedingly rapid; at other times it is quite as slow; but when it has taken place, the horse is usually sound for a considerable time. Occasionally, however, a little heat and tenderness may be detected in that

quarter, and very slight lameness may be noticed for a day or two. Generally speaking, however, the horse stands sound, if well used and not over-worked, leather soles being almost indispensable.

Mr. Sibbald was much pleased with the account given by Mr. Bottle of the formation of bone, and thought him very happy in the authorities which he had quoted. He considered that fibrin was thrown out from the vessels, forming a kind of cellular membrane; then animal matter; and, lastly, the earthy salts. Still he differed from him on one point. It is said, that if the periosteum is removed, the bone will die. But how could it be so when blood-vessels were ramifying in the substance of the bone, and inosculating in every direction? He has seen many cases of exostosis in which the periosteum was quite destroyed, and yet the exostosis had gone on. When there is inflammation of bone, the vessels are in a state of preternatural action, and there is consequently more secretion of the matter which forms bone, and which is laid down there. This may be exemplified in spavin; and in those cases which may be called external spavin, it is very seldom that the periosteum is not denuded from their surfaces. The periosteum being inelastic, as soon as the pressure became too great, would give way. The operation called subcutaneous periosteotomy afforded relief to this state of tension by division of the periosteum; yet the exostosis was in many cases not removed by the operation, for the union of the divided parts was effected by the first intention. No undue action of the vessels ramifying in the bone took place, and the exostosis in some cases remained just where it was; but the pain was relieved by the periosteum accommodating itself to the enlarged surface. Again, the young horse is not more liable to bony excrescences than the old horse. Bone is thrown out, in most cases, to prevent parts giving way when subjected to undue action. This is the case with young horses put too soon or to too violent exertion; but in old horses we find bony solidification taking place to allow parts to carry on their functions, which otherwise, consequent upon the decay of nature, would be entirely unfitted duly to perform those functions.

The President.—Mr. Bottle, when quoting from others, did certainly say, that, by depriving bone of its periosteum, its vitality would be destroyed; but in a subsequent part of his Essay he told us that he entertained a different opinion.

Mr. Bottle.—The bone will probably die on removing the periosteum; but it is not a matter of course or necessity that it should. You must injure the bone to produce exfoliation of it.

Mr. Sibbald.—Except there was considerable external injury, there was not likely to be exfoliation. He illustrated this by reference to the coffin-bone. He did not see how there could be death of the bone while it was supplied with blood and nutrition.

The time having expired, it was resolved that the diseases of bone should form a subject on which to start from in the next debate.

DECEMBER 24, 1839.

Mr. Simonds in the Chair.

Messrs. Ransom and Beeson were elected Members of the Association.

The Secretary then rose, and thus addressed the Chairman :—

For the morbid specimens on the table we are indebted to you, Sir, Mr. Mavor, and Mr. Daws.

That of osteo-sarcoma, from Mr. Mavor, has been accompanied with the following account of the case, which renders it of tenfold interest, and in the same ratio increases our obligation to that gentleman.

"Sir,—The specimen of osteo-sarcoma which I send you occurred in an aged brown gelding. The appearances first observed were a slight proturberance near the os unguis, and an occasional snuffling noise, in the near nostril, during respiration, from which issued frothy mucus intermingled with pus, but entirely devoid of smell. These symptoms continued for several months, and the horse was pronounced to be glandered by many who saw him.

"Having been requested to examine him, I was convinced that such was not the case, but that the disease essentially consisted in an affection of the bones and sinuses of the head. Repeated blisters were resorted to, and warm water and solution of the chloride of zinc were injected up the nostril; still the discharge and protuberance continued to increase. The animal being now admitted as a patient into my infirmary, he was cast, and a probe passed up the nostril, which, when withdrawn, was followed by the escape of a quantity of pus mixed with blood. After a short time, breathing though this nostril became obstructed, and almost wholly prevented from taking place. He was therefore again cast, and a trocar thrust into what now appeared to be a tumour, whose structure was osseous and fibrous; but no escape of pus or blood followed the puncture. He remained under my care for about seven weeks, during which period no favourable change could be reported as having taken place. He was then removed, and subjected to the homœopathic plan of treatment for a very considerable time, without any good whatever resulting from it; indeed, during it, the tumour increased to such an enormous size that the animal was destroyed.

The tumour, on being dissected out, weighed 11 lbs 4 ounces. The ethmoidal and sphenoidal bones were diseased; the outer ta-

ble of the skull was affected with periosteal exostosis; the bones of the face were involved, and the molar teeth imbedded in the soft mass; but not until a short time before he was destroyed did he express any pain while feeding. The membrane covering the septum nasi on the near side was highly inflamed, but on the opposite it appeared perfectly healthy; the pressure of the tumour, however, had caused it to bulge, and thus was the channel for the ingress and egress of the air diminished.

"I am, dear Sir,

"Your's, &c.

"W. MAYOR.

"40, New Bond Street."

The Secretary continued. Having thus succeeded in obtaining the attention of the members, he could not refuse himself the gratification of offering his meed of praise to Mr. Bottle for the paper he had introduced. It was the first which had emanated from a pupil this session, and it augured well for the continued prosperity of the Association. He sincerely hoped that many would follow the example thus nobly set; and he was sure there were many present who could do as well—he would not say better—if they liked. If, with the opportunities now before them, the pupils did not acquire knowledge, he thought the remark of Dr. Johnson might be justly applied to them,—"He that voluntarily continues ignorant is guilty of all the crimes which ignorance produces; as to him that should extinguish the tapers of a light-house might justly be imputed the calamities of a shipwreck."

On the last evening's meeting there were, he considered, some valuable hints elicited during the argument, although he might not agree with all that was advanced. For instance, he could not concur with Mr. Sibbald in the view which he had taken, that an exostosis is sometimes without a periosteal covering. He believed that with every deposit of bony matter enlarging the tumour there was a corresponding distention of the investing membrane. If this were removed, he agreed with Mr. Bottle, that death of the bone would take place. At any rate, he could say that such was the case in his own person. Those parts of his middle finger which had been denuded of periosteum all sloughed away, giving to the tip a withered appearance.

Referring to the modes adopted for the removal of exostoses, he adverted to the compounds of iodine, which, although he might question their power of being the means of removing highly organized bone, yet over the loose granular ossific matter which is thrown out he believed them to have full influence by their stimulating the absorbents. Of course, as it respected the cartilaginous nidus, there

could not be a question in his mind; it being among the singular effects of these agents, that they quickly cause an absorption of newly-formed parts and abnormal growths.

The compounds most valuable he believed to be those of the iodides of mercury; and here with pleasure he would refer to a paper which appeared in THE VETERINARIAN of last month, by Mr. Hugh Ferguson, of Dublin, with whom he concurred in the view which he had taken, that a true chemical compound formed by the definite union of these substances is to be preferred to a mere mixture of them. He was glad to see principles like these beginning to obtain; they were preludes to the inculcation of true science, gave proof of its value and the exercise of thought, and must work a corresponding good.

Exfoliation of bone was one of the diseases of this tissue to which Mr. Bottle had drawn the attention of the Association. This was always a slow and tedious process; but he thought it might be accelerated by softening the osseous structure. This had been effected by acetic acid applied on a pledget of tow or cotton. A better agent, however, was the lactic acid, which possesses the property of dissolving the earthy phosphates. He threw this out as a hint merely, not being aware that it had ever been so employed.

In the course of his late readings he had perceived that the French had introduced a forcible method of relieving anchylosed joints, perhaps by breaking down the bony union; but such a mode of practice he did not think could ever be applied to the patients of the veterinary surgeon.

The specimen of periosteal exostosis he then exhibited to the members he called upon Mr. Barth to explain the cause of, who, during his residence at Swansea, had had ample opportunities of witnessing this disease: the other beautiful morbid specimens he knew would be commented on by those who had kindly brought them before the Association.

"The Diseases of Bone," according to the arrangement at the last meeting, were now taken into consideration.

Mr. Barth begged to lay before the Association a few observations, which his late residence in the neighbourhood of the mines had enabled him to make on that singular malady termed in those localities "the copper smoke disease." He regretted that he was not a native of those districts, for then he might have given a more perfect account of it. It appeared to be chiefly an affection of the joints, at least it was so in cattle, and it has occasionally assumed this character in the horse. He had traced several cases to the bursal cavities, and to the synovial membranes of the joints, around which there was considerable tumefaction. This enlarged to what, under other circumstances, would be termed a very considerable extent, and there was evidently very great pain. The swelling continued to increase and to fluctuate for a certain time, and often to a very long period, until the fluid began gradually to thicken. From this it passed through various stages of concretion, and, at

length, assumed the character of perfect bone, the joint seeming to a certain degree anchylosed.

He had the opportunity of examining one after death—a carriage horse. The disease was in the near fore-leg. There was great distention of the synovial membrane, both in the anterior and posterior portion of the knee. It was filled with a strangely organized substance or tumour, extending from one side of the cavity to the other, its interior assuming precisely the honeycomb form, and the cells lined with a black pigment. He saw many cows labouring under this disease. There were thirty belonging to one farmer, but they were removed to another locality before he had the opportunity of seeing them. Another farmer had five cows all ill of this complaint. One of them was in a dreadful state. The owner said that she had dislocated one of her fore legs. At first he thought so too, for it looked very much like it; but, on more closely examining her, he recognized the copper smoke disease. She was down, and could not rise.

On the following day another of his cows was taken in the same way: then he, too, recognized the influence of the copper smoke. Some old farmer came to the owner, and said, "If you will allow me to remove the cows, I will cure them." He was allowed to remove them, and they recovered.

These diseases were evidently, according to the common opinion, the effect of the copper smoke. The wind blew in a direction from the mines over the situation of the cattle, and these animals were taken ill a day or two before it began to rain, a circumstance to which a great deal of attention is paid there.

Another case of a horse he remembered—an Irish horse. He was kept in the stable, except when he was used for posting. He was fed principally on hay. Unfortunately, he was within the reach of the copper smoke, and he had the same enlargements in both his fore legs. The owner was convinced that it was the smoke, and he removed him, and changed his diet, and he recovered. The enlargements subsided, and he became perfectly sound.

Mr. Barth apologized for this short account, having been so little a time in the neighbourhood of the mines.

Mr. Simonds.—Did Mr. Barth usually find inflammation of the synovial membrane produced by the copper smoke? The specimen before them would somewhat negative such a supposition, for there was very great inflammation of the periosteal membrane, and the ends of the bone were perfectly normal.

Mr. Barth replied, that in his case the synovial membrane was that principally affected by the copper smoke. He saw many bones of the extremities lying about in which the periosteal membrane had been involved; and in many instances horses were to be seen crippling about, and cows lying down to graze on account of anchylosis: but in the first outset of the complaint the inflammation was principally or wholly that of the synovial membrane. The membrane apparently loses its tenseness; it becomes elongated and distended, as from some fluid within it. The synovial matter also undergoes a strange change. It, or something deposited in its room, continues to be secreted until the joint is sometimes as large as a child's head. The whole then becomes consolidated.

Mr. Ernes had witnessed somewhat similar effects attending the smoke or vapour of zinc. There was at Lieges a large smelting establishment. The ruminants all suffered, and many persons were compelled to give up the keeping of cows altogether. The limbs became enlarged, and the milk was secreted in diminished quantities. The greater part of the grass lands about the town were turned into gardens, because the ruminant could not live there. The immediate effects of these vapours otherwise he was not acquainted with.

The Secretary remarked how advantageous it was to the Association, and would ultimately prove to be so to the profession, when the members so freely communicated the peculiarities of their respective localities. This copper-smoke disease had not been heard of until a few years since. Through the kindness of Mr. Kingsley he had had the opportunity of seeing and hearing something about it, and to him he was indebted for the specimen upon the table. He at first thought that possibly some of the compounds of copper were absorbed into the system; but from Mr. Kingsley he had learned that neither these nor the sulphurous emanations had much to do with the matter; but the disease was caused by the arsenical fumes that were extricated in the process of smelting the copper. It may be so in the case to which Mr. Ernes referred. Arsenic is a metal diffused throughout the whole mineral kingdom, and especially with the ores of zinc and copper.

Mr. Barth.—There is a deposit of a metallic substance, whatever it may be, perfectly distinct, on the herbage. In dry weather it can be seen on the grass and vegetables around. The herbage is nearly destroyed in the neighbourhood of the mines.

Experience has taught them some little management of the cows. After a certain time, and generally a short one, the cow begins to yield less and less milk, and, if suffered to remain, would become quite dry: but she is removed to some other district by a few of the most provident, and, as already stated, the health of the animal returns, and, with it, the secretion of milk, when she returns to the neighbourhood of the mines, and again becomes to a certain degree useful. It cannot, however, be expected that she should have regained her perfect health: and this experiment must not be too frequently repeated. The milk is used for present purposes—for cheese and butter. It is rather poor when drunk soon after it is drawn from the cow, and without the churn there is no separation of the butter: the cheese is of a very poor kind, and the butter is far from excellent.

Mr. Ernes.—There is another disease in Germany, a softening of the bones generally, without any apparent previous disease. Some one of the limbs begins to break and to fracture, the yielding of the bone increases, until almost every part gives way. The scapula and the humerus are the bones which are first and principally affected. It is not mollities ossium. It is more allied to fragilitas ossium. It is an epizootic. They are principally horses belonging to poor people, and which are not well fed. It likewise attacks cattle of all ages, but particularly those that are young. He thinks it may be accounted for by the want of exercise. During the whole of a long German winter, the ground is usually covered with snow, and the cattle remain in their confined stalls, with the power of very little, or, at the best, very insufficient motion, and at the same time, their food being of bad quality and small in quantity. When the spring comes this fragility appears; for the bones in those that are diseased fall, in a manner, to pieces, or, at least, are fractured by the most trifling cause.

Mr. Barth, in answer to a question, replied, that there were not many sheep kept in that neighbourhood, and few or none were well bred. They are not exempt from this copper-smoke disease. It attacks them principally in their fore legs: when they are in spirits they seem very little affected, except with a greater or less degree of lameness.

Upon consideration he remembered one or two horses which were so much affected as to be unable to bend their knees. They grazed like a giraffe. When the disease was allowed to pursue its usual course, under the influence of the copper-smoke, there was no relief afforded, whatever means were tried: but if they were removed from the influence of the poison, they soon began to get better. If, however, bone was once deposited, nothing would cause its

absorption As to the manner in which this poison attacked the system, he could not say any thing decisive. There was, in his opinion, a poisonous deposit on the herbage, and, being taken into the stomach, it was absorbed, and this infected the system.

The Secretary expressed to Mr. Barth his own thanks, and that of the Association generally, for the interesting account he had given of this strange disease. All animals in similar localities are liable to diseases of a certain kind. The manner in which the poison is received and diffused may be hidden from our ken; but the osteal tissue is plainly that which is most disposed to be affected in the copper mines of this country, and in the zinc mines of other countries, as shewn by Mr. Ernes. In fact, where the vapours of arsenic are eliminated, there the health of animals becomes gradually affected. The symptoms may somewhat differ in different localities, but where the agent is the same, the effects must be nearly the same.

In those districts where lead mines abound, cattle and horses are the frequent subjects of attacks of spasmodic colic, or that which closely resembles it. This is accompanied with obstinate constipation of the bowels, which calls for the most active measures to overcome. But although from time to time we may afford relief, ultimately the whole system becomes involved, a state of paralysis is induced, and death closes the scene. There is, as it were, a gradual absorption of the deleterious agent, which acts as a slow poison.

Examining a short time since the incrustation on the teeth of a sheep which Mr. Barth had brought from Wales, he found it to consist of the sulphuret of iron, with the phosphates which usually make up the tartar; but no trace of arsenic could he detect. Still he could not say that this compound was not deposited on the herbage.

Mr. Evison said that there was a disease among cows somewhat similar to this, seemingly dependent on wet weather more than any thing else. Bony matter was deposited in the joints; and if no means were taken to check its progress, complete anchylosis took place. He had also not unfrequently seen it in lambs three or four months old. It was connected with rickets, or one of the forms which that disease assumes. When the epiphyses of the bones are joined there can be no motion in the joint.

Mr. Dycer had seen many modifications of the disease of the capsules of the joints described by Mr. Barth. He had never lived near any smelting works, but he had near low marshy lands, and there this disease was very prevalent. Thirty beasts belonging to two farmers were attacked with it, and that almost without warning. The capsules of the joints were much inflamed, and there were bursal enlargements and stiff joints. He considered it as a species of rheumatism, very likely to be found in such a locality, and, indeed, in many others. The causes are numerous,—none, perhaps, so frequent as those to which these poor beasts were exposed, or productive of more injurious effects—wet, cold, and hunger.

He has also seen many cases of apparently spontaneous fracture in young animals. It has oftenest occurred in the fore limbs. In some poor creatures it has gone almost the round of the frame. It has begun with the scapula; the femur has next suffered, and then various other bones, until the disease had fairly gone the round of the larger ones. This was in a hilly district. They gave the name of rickets to it, and perhaps they could not have given a more appropriate one, considering the resemblance which it bore to the disease in the human being so called. Confinement could not be the cause of this, for in Edinburgh the cattle are often kept in all the year round without any disease being the consequence.

Mr. Mackinder had often witnessed the disease referred to by Mr. Dycer

in young cattle, but not in the older ones. The first day they are turned out they often get a broken limb. This is easily set in the ruminant. He has seen many cases of inflammation of the joints and of the bursæ, on a damp layer, and these have frequently terminated in stiff joint. Why should all this appear in the ruminant, but not in the horse? He had seen a great many young horses, and he had witnessed the inflammation of the joint to which they are subject, but nothing which could be identified with these affections of cattle.

Mr. Dycer said, that he had been referring to the diseases of young animals alone; the maladies of the adult or the aged might resemble those spoken of by Mr. Barth.

Mr. Twinberrow related the following case of fracture, which he hoped was not wandering far from the subject which they had been so usefully discussing. The fracture was in the off hind leg of a cart horse, and occurred in the practice of Mr. Rose, V. S., Worcester. It was supposed to have been the result of a fall, although on examination after the accident no fracture could be detected, neither was its existence known until the *inspectio cadaveris* demonstrated it. Perhaps, immediately, and for some time after the accident, the fracture was incomplete.

The usual antiphlogistic remedies having been had recourse to, as bleeding, fomentations, rest, &c., some relief appeared to have been afforded. Soon after this the animal became lamer, and, on close inspection, it was discovered that abscesses had formed in the muscles about the haunch on either side. There was likewise much irritability of the bladder evinced, amounting, at length, to almost entire retention of urine.

The abscesses were opened, and a free discharge of pus took place, to the amount of half-a-pint from each; but the animal did not appear much relieved, and, on the morrow, died.

On post-mortem examination, the head of the femur, just at the insertion of the ligamentum teres, was found to have been fractured, and a piece of bone as large as a half-crown was detached. Abscesses were likewise found within the pelvis, pressing on the neck of the bladder, and causing the irritability of that viscus and the retention of urine beforementioned. The bladder was greatly distended, highly inflamed, and the ulcerative process was set up in its tunics.

The muscles, too, enveloping the abscesses were in a state bordering on decomposition. They were almost gangrenous, and highly offensive. Mr. Twinberrow begged to ask the members of the Association whether they had ever met with a case like this during their practice? and he would likewise ask them, if it was not their opinion, as it most certainly was his, that the fracture occurred not immediately from the fall, but in consequence of inordinate muscular action consequent on that fall? He had neglected to state, that such had been the extent of suppuration and decomposition in the parts, that the ligamentum teres was found actually sloughed from the fractured bone.

The Chairman, in the name of the gentlemen present, begged to thank Mr. Twinberrow for the interesting case which he had related. Neither the nature nor the precise seat of the evil could have been detected during life. A case of fracture of the femur similar to this had not occurred in his practice; but cases of latent fracture were far from uncommon, and where we should least have suspected them. How often had they occurred in the fore leg.

Mr. Daws had come in late, and was unwilling to interrupt the interesting discussion or conversation which had been going forward; but he could not permit the subject to close without a few remarks on the diseases of bones.

He observed that the opportunities which he had had of witnessing the causes and effects of diseases of bones convinced him that unhealthy action was often

set up from injuries &c. inflicted from without. The parts affected by necrosis were generally the orbital arch—the lateral process of the atlas, the outer head of the humerus—the point of the ulna—the toes and heels of the coffin bone—the ribs—the scapula—the ileum—the trochanter femoris, and the outer head of the tibia or fibula.

The sloughing process is very slow, and the treatment must be left principally to Nature. Antiseptic lotions will be of service on account of the unpleasant effluvia arising from the affected parts—and which frequently injure the appetite and health of the animal to a degree that is scarcely expected.

Caries generally affected the turbinated bones and the teeth. The lower jaw is not unfrequently thus diseased from pressure of the bit in hard-pulling horses, causing fistulous sinuses in the bone, which prove very lengthy in their duration, and tedious of cure.

The potential and actual cautery are here required to be used with judgment; also the extraction of the teeth, and the application of the trephine.

The hock is oftener the seat of anchyiosis than any other joint; but every joint in the body is susceptible of being in a state of anchylosis, from injuries received or diseases occurring in their adjacent parts—the vertebræ from fistula—the larger joints from wounds into their cavities, or abscesses forming near them.

With regard to remedial measures, he could say but little.

The parts affected by exostosis are so well known that to describe them would be mere repetition.

Blisters, setons, firing, iodine frictions, &c., may be used, according to the judgment of the practitioner.

Fractures seldom occur; but when one does take place the animal is generally destroyed as an act of humanity. Many, again, undoubtedly might be rendered serviceable, if scientific methods were adopted for the reduction of the fracture. It may be the duty of the veterinary surgeon to press this. Let him, however, be cautious for his own sake as well as that of the suffering animal.

Connected with bones there are other diseases, as fungus hematoides—osteosarcoma: they, however, occur but seldom in quadrupeds. Many of the specimens which now lie on the table appear to be rare and valuable: our worthy chairman, he trusted, was about to describe them.

The Chairman, after complimenting Mr. Daws on his concise but comprehensive account of the diseases of the bones, proceeded to speak of the specimens which lay on the table. He had gradually accumulated them in the course of his practice, and they would all more or less illustrate the subjects which had been discussed that evening.

He would first exhibit a case of "fracture of the scapula." The specimen belonged to a horse who fell as he was drawing a cart, and fractured the neck of that bone. Almost the first glance of it suggested the cause;—the bone is thin and brittle, and there is an evident deficiency of animal matter. This state of the bones not unfrequently took place in old animals, more especially in such as have been badly fed. It was a specimen of that disease which had properly been named "fragilitas ossium," and, in this case, was probably produced from absorption of the animal matter, leaving, as a consequence, an excess of the earthy composition of bone.

The second specimen is likewise an affection of the scapula. Here there is an extensive ossific deposit, with caries, or a breaking up of the bony structure both on its external and internal surfaces. It was the result of a long neglected case of fistula of the withers. Nothing could be done in such an extreme case with any probability of ultimate success, and he had him destroyed at once.

The third is a singular case of an ossific tumour, taking its rise from the inner portion of the anterior maxillary bone, between the turbinated bones, and occupying the whole of the nasal cavity on that side. It owes its origin to the uneven wear of the molar teeth, one of which, the second on the right side, had become carious. The opposing tooth soon gained upon this, from the balance of attrition being, as it were, destroyed, and it was presently worn down to the gums. The caries now rapidly spread to the alveolar cavities, involving them and the bony palate in the disease. A communication was established between the nasal cavity and the mouth, and from this resulted the growth of this sponge-like looking ossific tumour. Strange as it may appear, the farrier who attended the case said it was one of glanders, and the horse was ultimately destroyed. The head was afterwards brought for my inspection and opinion. This shews the necessity of a more careful examination of these parts when there is considerable discharge (as must have been in this case) from the reflections of the Schneiderian membrane. The question of probable cure is another thing. Here the chances were much against it: but it presents us with the disgraceful fact of a horse being destroyed on account of a disease which he had not, and that affection being glanders, when in reality he had only a carious tooth, and the spungy growth occasioned by it quickly spreading to the contiguous parts. See the beautiful, and, if we may apply the term to such a case, arborescent growth of the tumour. I value this specimen partly on this account, but more because it is a constant lesson of caution to me; and I trust that the history of it will be so to you.

The next is a specimen of ulceration, the result of inflammation of the synovial membrane of the hock joint. Mr. Goodwin, I believe, was the first person who called the attention of the veterinary profession to this disease. The case sadly puzzled one or two persons who examined it, and at last the horse was destroyed, for the lameness was excessive, and he was almost useless. There was, as you see, very little enlargement, but most extensive ulcerations of the cartilaginous coverings of the cushion-bones of the joint. I had an opportunity of getting possession of the hock of the other leg of this horse. This is it. You will perceive that there is a perfect consolidation of the cushion bones, but no external enlargement producing that appearance which we call spavin. No lameness was observable; and I am inclined to believe that this consolidation of the small bones of the joint was the result of a subacute inflammatory action, produced by the animal almost constantly supporting the weight upon this leg, in consequence of the great pain of the other hock.

The next case is one of ossification of the lateral cartilage, in consequence of a blow. It is valuable, as shewing that this disease may arise from more than one cause, and from external violence as well as hard work. It is plain and prominent enough on one side, without the other participating in it, the cartilage here being perfectly normal.

Here is a specimen of ossification of both cartilages, and which you know to be common enough, as well as the one which I now introduce to your notice, "anchylosis of the knee joint," the result of inflammation of the synovial membrane from the opening into the joint not being sufficiently early closed. These specimens, Gentlemen, are laid before you merely to shew the variety of disease in the osseous structure.

The next case, perhaps, is rather more interesting. It is, as you perceive, a separation of the epiphysis of the os calcis. The patient was a yearling bull, which was turned into a paddock, next to which were some cows. In his desire to get at them, which, if possible, he was determined to effect, he had to leap a high and strong hedge, with a wide ditch. In endeavouring to do this he fell, and was shortly afterwards found by his owner incapable of

rising, having fractured the os calcis of both hind legs, viz., the epiphysis of each bone was torn off, and, in my opinion, from the force and power of the contraction of the gastrocnemii muscles. An attempt was made to apply mechanical power to overcome the muscular contraction, and thus to bring back the ends of the bones to their relative situation, but without effect, and it was necessary to destroy the patient.

In this case there has been a fracture of the lower end of the metacarpal bone. Anchylosis of the pastern joint followed, and the animal became serviceable for many years. The arrangements of the spiculæ of the bone are both curious and beautiful. You observe that the sessamoids are likewise participating in the disease; and that, on either side, there is some considerable deposition of bony matter, while a clear course is left for the passage of the flexor tendons.

The next specimen also belonged to the ruminant. It is the leg of a bullock that had received a violent contusion just above the knee joint. Inflammation and suppuration ensued, and the bone soon became diseased. This speedily involved its cancellated structure, producing caries and artificial openings into the medullary cavity. It is a beautiful specimen of osteo-sarcoma; and owing its origin, not so much to any original injury done to the bone, as to the neglect of the farrier who attended the case, and who allowed the matter to remain pent up during some weeks, fearing to open the abscess because of its near proximity to the joint. Such is the ignorance of cattle practice which even now disgraces almost every part of the country. The skin of the bullock, more especially that portion covering the legs, is very thick, and possesses, comparatively speaking, but little vitality. It should, therefore, be adopted as a rule, that in all accidents where suppuration ensues, an exit ought to be given to the pus so soon as the least fluctuation can be felt in the tumour. This will apply to all our patients, but more particularly so to the ruminant. In the horse we know that nature will frequently and speedily effect an external opening. Upon being called to this case I directly evacuated the contents of the abscess; but so much mischief had been done by neglect, that, failing after a short trial to effect a healthy action in the parts, I had the poor patient destroyed.

This is, likewise, a specimen of osteo-sarcoma, the result of a neglected case of fungus hæmatodes in the eye of a cow. This disease seems, in this class of our patients, to assume more of a cancerous character. Here not only was the eye destroyed, but the orbit and bones of the face gave way to the morbid action. I will not give any detailed account of it, for it is precisely of the same nature as that of Mr. Mavor, only belonging to the ruminant, and produced from a different cause.

This, I think, I may be allowed to call a splendid specimen of a tumour occupying the right side of the upper maxillary bone. The head, you perceive, is that of a cow. The right nasal cavity, the palate, and alveolar cavities, are involved in the disease. Two of the anterior molars are gone, and the faces of the others are deeply worn by the lateral motion of the lower jaw, giving them a similar appearance to the teeth of a saw. The os unguis and nasal bones are forced from their places, but otherwise little affected; the superior maxillary, however, appears to have yielded entirely to the growth of this beautiful sponge-like bony structure.

This, perhaps, is not an uninteresting specimen of a diseased navicular bone; but our time is quite expired, and I must refrain. I thank you for the patience and kindness with which you have listened to me during this novel attempt. We have not departed far from the regular subject of the evening, and some few points may, perhaps, have made the desired impression on our young friends.

The Secretary was perfectly assured that every member would share in his

feelings when he proposed a vote of thanks to Mr. Simonds for the pleasure and information which they had derived from him that evening. The simple and lucid manner in which he had described the various specimens was noticed and admired by them all. He begged to propose a vote of thanks to Mr. Simonds.

Mr. Simonds was much indebted to them. He had done no more than his duty; and nothing gave him greater pleasure than imparting, especially to his younger brethren, every particle of information which he might chance to have acquired.

Certificates of Membership were then voted to Messrs. Bottle, Frampton, and Page; and of Fellowship to Mr. Bottle.

[We cannot refrain from congratulating the Association and the profession on the character of the meetings of the Association, and the triumphant progress which has been made during the early period of this session. The history of the use of the torsion forceps in veterinary practice in arresting the hæmorrhage consequent on castration was stated in the simplest and most unassuming way by Mr. Daws. It had been put to the severest test by himself and two of his friends; and although the first case was not successful, in every after trial it was all that the experimentalists upon it could wish. The sketch which is given by Mr. Daws of these early experiments reflects on himself and his friends the highest degree of credit, and will be read with much interest.

The debate of the first evening wandered to a certain extent from the subject; but still it was the subject of castration, although the peculiar practice of torsion was somewhat forgotten.

On the second evening, the advocates of torsion, and those who doubted, mustered in full strength, and the advocacy of that operation by Messrs. Daws, Simonds, and Youatt, and the dubitations of Messrs. Sewell and Spooner, will be read with much interest. The arguments of these gentlemen contain the substance of what, in the present state of the profession, could be advanced on the subject. The perfect good temper which prevailed was highly creditable. We want but a few more nights like that, and the attendance of a greater number of those who can so well illustrate the various topics connected with our art, in order to make these assemblies at once delightful and useful.

On the next meeting, a paper was read by Mr. Bottle on "Bone." We have preserved more than we are accustomed to do of the debate which ensued. We did so purposely, because it was an admirable specimen of a good student's night.

The author of this Essay had already passed his ordeal before a higher tribunal, and with a great deal of credit. It was not a tenth part so severe as that which he now underwent before his compeers, nor did the result reflect on him greater honour

These occasional students' nights are most valuable, but *the practitioners' night!* Would that it were more numerously attended.

That of December 24th was an excellent one, although few practitioners were present. "The *diseases* of bone" was the subject.

The debate was opened by the Secretary, who, after reading a letter from Mr. Mayor, descriptive of a case of osteo-sarcoma in an aged gelding, favoured the meeting with his opinion of the function of the periosteum—the best compounds of iodine for the removal of exostosis, and the means of assisting and accelerating the exfoliation of bone.

Mr. Barth gave a most satisfactory account of that singular affection of the joints in horses and cattle, in the neighbourhood of some of the Welsh mines, and characterized by the name of "copper smoke disease." There was scarcely a particular respecting it which he did not explain; and he even spoke of partial although somewhat treacherous *cures*. This naturally led to an account of similar diseases in our own and other countries, apparently produced by similar causes. Hence the transition was natural to "the diseases of joints;" and most valuable were the observations that were made by many of the members. To this succeeded a well-detailed case of fracture, by Mr. Twinberrow, and some excellent observations on the general treatment of diseases of the bone by Mr. Daws; but the most interesting and instructive thing was the introduction, by Mr. Simonds, of a splendid collection of diseased bones of various descriptions, and with the history of which, as they occurred in his own practice, he favoured the meeting. We preserve the records of a few.—Y.]

JANUARY 7, 1840.

The President in the Chair.

The following were elected Vice-Presidents:—

Mr. Lord, Mr. Lillyman. Mr. Dunn.

A Resolution of the Council was read by the Secretary, that, "Out of respect to the memory of their late Vice-President, Mr. FIELD, his name should remain on the list of Vice-Presidents during the present session."

Mr. Corbett, V.S., presented to the Library his work on the "Eye of the Horse and on Lameness."

Many new and valuable works were directed to be added to the Library, among which were that splendid collection of the portraits of animals, Low's Illustrations of the different Breeds; Rymer Jones's Animal Kingdom; Costello's Cyclopædia of Surgery; Davy's Anatomical Researches; Collier's Pharmacopœia; Skey on Ulcers; Scott on the Specific Contagious Poisons; Coggswell on Iodine; and Blaine's Rural Sports.

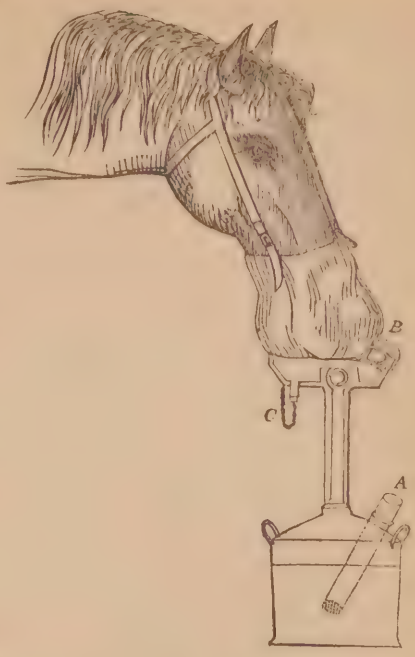
The Secretary reported that he had received several interesting communications addressed to the Association during its short recess; and he, first of all, laid on the table a cow's foot, certainly in a state of high disorganization, forwarded by Mr. Rose, of Worcester, through Mr. Twinberrow, who would, perhaps, favour the meeting with a few remarks on it.

Mr. Twinberrow said that the history of the case was a very short one. Mr. Rose stated to him, that at the latter end of April, or the beginning of May, he was called upon to attend the cow. At that time he saw but little the matter with her. There was a slight swelling of the foot, and he put the cow under such treatment as he considered at that time necessary.

The cow got much better, and he only saw her once or twice on the first occasion; but, about a fortnight ago, he was again called upon to attend her, when he found the foot to be nearly in the state in which it now appears. She continued to feed well, but she evidently decreased in flesh, and, as the hoof gradually enlarged, the animal was killed at his request. Mr. Rose remarked, that he had hardly ever met with an instance of the kind before; certainly not one in precisely the same state.

Mr. Twinberrow understood that the disease was originally situated in the coronet. On the last visit of Mr. Rose no treatment was adopted, although the disease did not appear to give much pain, yet, as the animal continued to lose flesh, she was sent to the butcher. He regretted that the foot was now in so advanced a state of decomposition; but still it would afford some idea of the strange character of the disease.

The Secretary then announced, that the important considerations which would occupy them during the remainder of the evening would only permit him to notice the kidneys, bladder, and part of the liver of a cow affected with red-water, sent by Mr. Bainbridge; but there were several veterinary instruments lying before them, particularly an inhaler for the horse, invented by Mr. Read, and probangs for dislodging substances impacted in the œsophagus, by Mr. Simonds, which both those gentlemen would describe. Their attention would first be directed to Mr. Read's apparatus. He was well known to them as a most ingenious mechanician and inventor or improver of many veterinary instruments.



Mr. READ gave the following explanation of his apparatus:—"What I propose is to place herbs or chemicals, whichever may be thought desirable, into the larger vessel, and then put into it two quarts of boiling water. The tube *A* is perforated, by which means the air which is inhaled by the animal, after passing down the tube, and having at each inspiration come up through the boiling water, passes into the dome, and up through the tube, rising from its centre, at the top of which there is a spherical valve, so arranged that the vapour may readily pass it. The action of the valve is so true, that I can with my own breath move it, and even make it spin round. On that rotatory motion taking place, the horse is enabled to inhale the vapour without any obstruction. The vapour now passes into the bag which is tied round the horse's nose, and thus he is enabled to pass it in and out of his lungs with freedom. When the horse expires, the valve at the top of the connecting tube is closed, and another valve, *B*, by the act of expiration, is opened, which latter valve keeps working with a rotatory motion similar to the first in inspiration. The vapour passes through this short tube at every expiration, so that the impure air, after passing through the lungs, is discharged, and fresh air obtained at every inspiration.

The bag being hung on the horse's head by means of leather straps, a string is drawn tight round the nostrils, by which the entrance of the external air is prevented; so that all the air which the animal inhales must pass through the warm water, and thus become impregnated with any medicinal substance it may hold in solution. Two quarts of water would keep sufficiently warm for the exhalation of vapour at least half an hour.

Any kind of herbs or chemicals may be used, and by these contrivances the air inhaled becomes medicated.

In the case of strangles and severe colds, there might possibly be some danger of the mucus passing into a part of the apparatus. In order to prevent this, I have made a smaller tube *C*, connected

with the lower part of the bag, and closed with a cork, which may easily, from time to time, be removed. This part of the apparatus is of tin, so as to give it form, and allow of the attachment of tubes.

This apparatus has been fastened on a horse for nearly half an hour, and the animal seemed to enjoy it. The horse at one time coughed, and by the act of coughing the cap covering the expiratory tube was thrown half across the stable, as if it had been blown from a gun.

Since this, I have fixed it on by a joint, which prevents the cap from flying off, and it forms no obstruction to the action of the apparatus; but, on the contrary, I have found it uniformly to answer the end which I originally designed it to do. In the first instance I made the connecting tube flexible. The present one is not flexible. With respect to the operation of the machine, I perceived no difference whether the tube was flexible or not. The latter, of course, must be the more durable.

Mr. Mavor has seen the apparatus, and approves of it.

With respect to the valves, Mr. READ had made use of them for very powerful fire engines, and they were never out of repair. Since the period he had taken out a patent, he never met with but one valve out of order.

He had made an apparatus for fifteen years for the human subject upon the same principle as that which he now exhibited; and he presumed that, as it answered so well, it was equally applicable to the horse.

He also observed, that it had been suggested by Mr. Mavor that a small lamp should be put under the vessel containing the water; but then came the question, whether that would not cause too much heat to be thrown out. On examination, it was found that a person could hardly bear with the hand the heat of the water, after it had been in the vessel half an hour.

The President.—You think, then, that agitation arising from the passing of the cold air through the liquid is rather advantageous? I myself do not see any objection to it.

Mr. Youatt.—It seems to be the only way by which you can derive a continual current of air of a proper temperature.

Mr. Read apprehended that, if the water were kept in a boiling state, the air would be heated too high. He had used a similar apparatus for himself in coughs and colds, and found it most beneficial.

This could be easily fitted to all the various sized heads of horses. He lately exhibited it at the Smithfield Cattle Show, and it was very much approved of. The valve was the most important part of the apparatus; because, by means of it, the vapour could not by possibility escape.

Mr. Dycer asked, what arrangement was made to prevent the atmospheric air from passing in at the sides of the bag when the horse inspired?

Mr. Read replied, that the bag was air-tight, and by means of a running string it was confined around the nostrils.

Mr. Dycer thought, from the conformation of the under jaw of the horse, that it would be very difficult to make the bag air-tight, unless some peculiar arrangement were made to effect that object.

Mr. Read said he had applied it to a very old horse, and it did not appear necessary to make any peculiar arrangement.

The President suggested that it might be easily adapted to the conformation of the horse's jaw by an elastic spring.

Mr. Read said it was evident the apparatus acted well, because he could hear the valve spin round at every respiration of the horse. Even in powerful engines, the valves, after long use, had hardly moved a quarter of an inch from their bearings. If the human breath could raise the valve, there could be no fear about a horse moving it.

The President.—There cannot be a question that very beneficial effects have followed the inhalation of warm vapour in all cases where the mucous lining membrane of the air-passages have been the seat of disease. This observation not only applies to the human subject, but also to the lower animals; and he should say that, if there was one animal more than another to whom the topical application of a warm or medicated fluid would be attended with benefit, the horse was that animal; and to him it could be administered with the greatest facility.

It is also well known that the horse laboured more under diseases of the respiratory organs than almost any other animal. This might arise from the fact of the horse ordinarily breathing only through the nostrils, having no means of breathing through the mouth. Therefore, on the slight investigation he had been able to make of this apparatus, he believed it to be one of value to the veterinary practitioner. It seemed to him to be an instrument which was constructed upon very simple and yet perfectly scientific principles; and, as such, the more likely he considered it would be to answer the purpose intended.

It must be apparent that, when the horse's nostrils were placed in the bag, he must have fresh air to inspire; it had, therefore, been arranged, that, when this apparatus was affixed around the jaws, it should so act as not to allow the animal to inhale again the air he had once expired.

The larger vessel was connected with the external atmosphere by a tube passing into its internal part. In that vessel the fluid was to be placed from which the vapour was to arise. This vapour would pass up the tube, and then find its way into the cavity in which the horse's nostrils were placed. The horse would be able to expire with facility, and the contaminated air would immediately pass away; while the air he inspired would be impregnated with the vapour arising from the vessel below.

Whether it was thought proper to allow the horse to inhale a medicated air, or warm air only, still this instrument was equally applicable to both purposes. It was certainly one far superior to any thing that had yet been adopted in practice.

It was a very common thing, in practice, to introduce into the nose-bag various medicinal agents; and this could now be done with increased facility and effect by the ingenious invention of Mr. Read, to whom the thanks of the Association were decidedly due. He hoped that that gentleman would be eventually able to carry it out to the utmost, and that he would meet with that reward to which his industry and talent in the construction of such instruments so justly entitled him.

Mr. Simonds said that he was about to introduce to the notice of the Association an instrument which he had invented for the purpose of removing foreign agents from the *upper portion of the œsophagus*—an accident that frequently occurred to our patients, and more especially to ruminants.

The veterinary surgeon was often called upon to give relief to cattle that were choaked, and which happened more commonly when they were living principally on turnips. The instrument generally used for that purpose was called the Unchoaking Rope, and was like the one which he now held, excepting that this was shod with a piece of horn which passed much more readily down the œsophagus than the loose flax or hemp with which the end is commonly furnished. It is a rude instrument, but not the less valuable on that account; for it frequently can be used with success in cases where we are unable to dislodge the root with the probang.

Mr. Munro, he believed, was the first person who improved upon the original instrument, he having introduced the hollow probang, which was made of iron-wire twisted in a spiral form, covered with leather, and furnished at each extremity with a bulb, generally made of lead: these were perforated so as to allow the gas which had become disengaged in the rumen to escape through the canula after the foreign agent had been removed by the instrument.

To this was afterwards added a flexible stilett to pass down the probang, in order to remove any obstructions which were not unfrequently driven into it from out of the rumen, occasioned by the force of the escape of the gas; the stilett likewise added to the strength of the instrument, which was found to bend when much power was obliged to be employed to remove the root from the œsophagus. As will readily be seen, the intention here was to propel the root onwards; but much mischief was occasionally done, by lacerating the membranes of the canal.

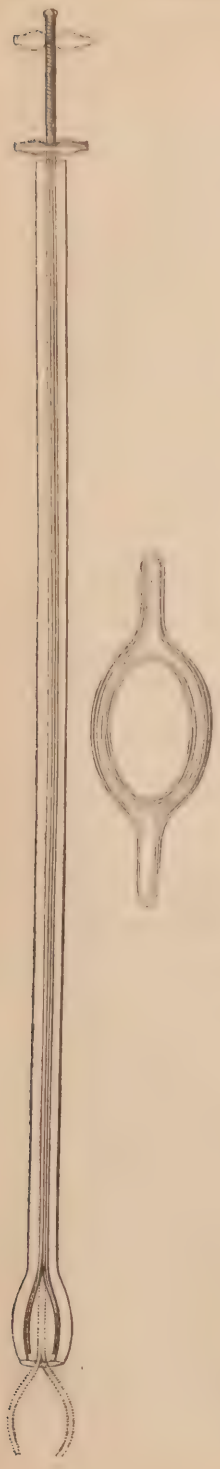
Mr. Read, to whom he was proud to appeal, was led to reflect upon this, and his genius was directed to the best means for removing the choaking substance. For that purpose he invented an instrument, a specimen of which lay on the table. This instrument was intended to be passed down to the turnip or other root.

and then, being furnished at the top of the stilett with a crank, and with a screw at the other extremity, the operator laid hold of the root by means of the screw, and withdrew it.

He had occasionally used Mr. Read's instrument, and in one or two instances successfully; but in the majority of cases he had failed. The failure he ascribed first to the circumstance of the root being too brittle for the screw to be inserted with any degree of certainty so as to draw it up; and, secondly, from the extreme length to which it was required to pass the instrument. When the obstruction took place so low down the œsophagus as to be within a few inches of its termination in the rumen, its passage into that viscus might, in by far the larger majority of cases, be obtained on applying moderate pressure; and there was seldom any occasion to attempt to draw it up the gullet. He would much prefer using even some considerable force, when exercised with a proper degree of caution, to pass the root onwards. This he must frankly confess.

In the course of his practice, and which had been somewhat extensive among this class of our patients, he had found that there were two parts of the œsophagean canal at which the root was most liable to be lodged: the one, immediately at the termination of the pharynx; and the other, within a short space of the entrance of the œsophagus into the rumen. Reflecting on this, and being accustomed to act as he had previously stated when the obstruction was low down, his object was to attempt the withdrawal of the root from the upper part of the œsophagus; and for this purpose he not unfrequently had passed the hand, using, as a protection to the arm, the ordinary balling-iron. Although he often succeeded, it was not without some risk; and he soon had made an instrument similar to the common gag, which would allow of the free passage of the hand and arm, and a rude sketch of which was here given. Being furnished on each side with a long handle, two assistants were enabled to keep the instrument firmly in the mouth, and, at the same time, prevent the patient from throwing the head on either side, so as to subject the operator to risk of injury during his manipulations. Occasionally, however, it was found that the root or other obstruction had descended a little too far to be withdrawn by the hand; and it was well known that if, under such circumstances, much force were used to drive it downwards, laceration or rupture of the œsophagus was almost sure to be the result. In order to prevent such an occurrence, he was led to invent an instrument* by which it could be brought up.

* The engraving of the instrument represents the relative situation of its different parts when the forceps are within the œsophagus ready to expand and grasp the obstructing body, and also before it is inserted into the œsophagus.



The instrument was, as they observed, made of an elastic hollow tube, through which passed a flexible stilett, furnished at the top end with a screw and handle, and at the other with a pair of spring forceps. When used, the forceps were to be drawn within the bulb of the catheter, and secured by the check screw at the other end. The instrument was then to be introduced into the pharynx, and passed onwards until the bulb was brought in contact with the root. The screw check being next removed, the forceps, by passing on the stilett, would expand, and, being turned in different directions, the root might and would be easily laid hold of. This would at once be known by drawing back the stilett, the pressure of the edge of the bulb closing the forceps, and allowing them to be entirely drawn within it, should the obstruction not be placed within their grasp.

If we have succeeded in thus laying hold of the root, the instrument and root will be easily withdrawn.

He was sorry that since the manufacture of the instrument he had had no opportunity of putting it to the test of practice; but he had no doubt that it was a perfectly practical instrument, and one that could be used with great facility. He had introduced it to their consideration, and, if the Association should think it worthy of notice, he should be highly gratified. It was for them, however, to comment upon and carry it into execution, should they think proper.

The difficulty in its use would principally consist in fixing the obstructing body in the forceps; and, as he had previously observed, it would be necessary to turn them in different directions, in order to discover whether the root was taken hold of. These forceps are serrated on their inner surface, and made somewhat tapering, for the purpose of passing readily between the root and the side of the œsophagus.

It is not possible for them ever to get hold of the lining membrane of the œsophagus. Mr. Morton had suggested that it would be a great improvement if the extreme edges of the

forceps were likewise serrated. By this there could be no increased danger of injuring the œsophagus, while it would afford greater facility in taking hold of the root; and he should certainly adopt the suggestion.

Mr. Read considered the use of Mr. Simonds' improved instrument to be perfectly safe.

The President understood Mr. Simonds to say, that, when the turnip was low down in the œsophagus, he would rather pass it on than draw it up.

Mr. Simonds.—Yes; but if the obstruction were not far down, it would be dangerous to pass it on with the instrument, especially if the root were large.

Mr. Mackinder thought, from the form of the forceps, that it would very much distend the œsophagus before it could pass down that tube.

Mr. Simonds said, that the inclination given to the bend of the forceps would occasion but a very slight widening of the œsophagus. The forceps were so formed for the purpose of preventing any injury being done to the inner coat of the œsophagus.

The President observed, that the turnip itself was not supposed to exercise any pressure; but the instrument, every half inch it went, would exercise a pressure outwards, and which was calculated to make for it a way along the sides of the turnip.

Mr. Cartwright said, that, some time ago, he was called upon to unchoak a cow. He introduced a probang of the ordinary length until he reached the obstruction, and he then pushed it for some distance. He thought the cow was thereby unchoaked, but he presently found that she was not relieved at all. She was in very great pain, and he was obliged to have further assistance. He got her mouth opened, and before the turnip would give way it was necessary to introduce his hand into the mouth and push the turnip onwards, and then she appeared to be eased from the obstruction. The instrument now produced by Mr. Simonds he thought to be a very great improvement. The gag they were accustomed to use was very small, and was liable to fall out of the mouth on one side or the other.

As to the instrument for drawing out the turnip or potato from the œsophagus, he was desirous of ascertaining whether Mr. Simonds really thought that, on drawing the forceps back, they would lay hold of the obstruction. He had his doubts as to their doing so. He thought the instrument would glide past it.

Mr. Simonds had very little doubt that there were cases in which the instrument would answer perfectly well, and in which there would be no difficulty in laying hold of the root with a firmness sufficient to draw it out. He could, however, imagine cases where that would not be the result; but this he considered to be no insuperable objection to the instrument. However perfect the instrument might be rendered, it was impossible to adapt it to every case.

Mr. Dycer wished to know whether it would be prudent, supposing the obstruction should be low down the œsophagus, to pass it entirely down to the rumen, because the lower part of the œsophagus was narrower than the upper, and therefore more liable to be injured by the pressure.

Mr. Simonds thought it would be decidedly right to push the obstruction along, after it had, what was commonly called, passed into the chest, or into any portion of the canal in its passage through the thorax. In such a case there would, he conceived, be less difficulty in passing it along than in bringing it up; and one method or the other must be adopted.

Mr. Read wished to ask Mr. Simonds whether he considered a small or a

large bulb to be preferable. In his (Mr. Read's) instrument for the human subject, he had adopted the large bulb. Sir Astley Cooper once observed to him, "Don't be afraid to choak a man. If your bulb were as big as a pigeon's egg, it would pass, or a hen's egg if the shell were off." When he was at the Veterinary College soon after, and mentioned this anecdote to the late Professor, that gentleman remarked, "Sir Astley Cooper needed not have been so nice as to have pulled off the shell; for the egg would have gone down with the shell on." He was of opinion, founded on experience, that the larger the bulb was, the safer it was, provided it was not absolutely too big.

Mr. Mackinder begged to ask Mr. Simonds whether he considered the forceps to be strong enough to distend the œsophagus.

Mr. Simonds replied that the œsophagus would be distended by a bulb of this size, and this would pass directly to the r ot, so that the distention required to be effected by the forceps would be scarcely any. The largest part of the bulb was not immediately at its end, but about three quarters of an inch from the end, and therefore its pressure on the œsophagus would admit of the passage of the forceps. But the forceps, even when expanded, were very little wider than the bulb; and their expansion would be regulated according to their size. He had no doubt that they would distend the œsophagus sufficiently to admit of the turnip or other substance being removed.

The Secretary then read the following communication from Mr. Bainbridge:—

Walden, Dec. 30, 1839.

Dear Sir,—Having this day had an opportunity of examining a cow that died last night of Hæmaturia, called by us Red-water, I have taken the opportunity of sending to you, as Secretary to the society, the kidneys and bladder, containing a quantity of the urine, thinking they might be acceptable; and I hope they will arrive in such a state as to afford you an opportunity of examining them, and, by being laid before the members of the society, of which I am sorry I am not a member, elicit some information relative to that complaint, which, although not often fatal, is not, in my opinion, well understood.

During the last year I have had seven cases, and all excepting this did well: they were simple cases, and caused by change of pasture.

The history of the present case is this: The cow was about twelve years old, had calved twelve days, and nothing was perceived to be the matter until Saturday last, when I was informed that she was dull, and would not feed. I sent her an aperient draught, and on Sunday morning her owner came and informed me that she was worse, and that her water was the colour of porter. I saw her about eleven o'clock: she was lying down, her ears and extremities were chilly, but not cold; her breathing quite natural; but she had a weak and frequent pulse, from 70 to 80. The muzzle was dry, the saliva hanging from the mouth, and when

made to rise she could hardly walk, but staggered as if she would fall.

I found on inquiry, that on the Thursday night she had been scouring. Her dung was now rather firmer than natural. I administered an aperient and tonic draught, and ordered her plenty of good gruel every half hour, and which was regularly given to her; but she died in about thirteen hours after I was called in.

The stomachs and intestines, and, in fact, all the organs excepting those I have sent you and the liver, were perfectly healthy: the gall-bladder was very large, and distended with bile; the liver small, and in part gangrenous. I find that in 1833 she was very ill for ten or twelve days.

I am, with much respect,

Your's, &c.

S. BAINBRIDGE.

The following description of the diseased viscera was given by the PRESIDENT:—

The morbid parts which were sent as connected with this case are the kidneys, the ureters, and the bladder. There is also attached to the right kidney a small portion of the liver.

The kidneys first came under observation. These organs were found to be surrounded by adipose matter; and they appeared to be in their perfect and natural state. On laying them open, he confessed he was rather surprised to see them present so healthy an appearance. However, they were not perfectly sound, for the cortical substance was rather darker than usual, and this discolouration was also particularly marked in the tubular, or what is usually designated the medullary portion. The tubes which made up this portion of the kidney were also larger than natural, and they appeared as if dilated by the viscidity of the fluid which flowed into the pelvis.

This cavity was also much enlarged; but it did not appear otherwise to be in the least affected, or to have suffered from inflammatory action.

The mucous lining of the ureters was likewise healthy; and on tracing the ureter to its termination in the bladder, it was found to be in a normal state.

On laying open the bladder, the lining membrane of that viscus was seen to be of an unusually dark hue; and it contained a considerable portion of fluid similar to that which had been already taken out; but there were in this organ no marks of inflammation whatever.

On examination of that portion of the liver which accompanied the uninary organs, there were evident marks of diseased action.

The parenchymatous structure was almost destroyed, and assumed that clayey hue which was so often presented in chronic disease of that viscus. It was easily broken down on pressure being applied; and the granulatory formation presented itself on cutting it open, although the liver itself was completely disorganized. It appeared like one mass of clayey matter, almost in a state of disintegration. He should imagine that the organ generally presented even more marked disease than that portion of it which he had had an opportunity of examining. He was more particularly led to this conclusion by the observation which was made by Mr. Bainbridge in his letter.

The result, therefore, of this examination appeared to him completely to accord with the observation which he had before made on similar diseased parts, and also with the opinions advanced by him in other cases—that, in fact, although the kidneys might be considered the source whence this peculiar fluid was derived, and which were shewn to be exercising a diseased secretory action, yet the primary seat of the affection is the digestive apparatus of the stomach and its appendages, and particularly the liver.

This consequently became not only a very important question of general pathological investigation, but also one of the greatest importance to the practitioner in the treatment of this disease. It alone could guide him to the proper medicinal agents that should be employed, as well as to the organs on which those agents should exert their chief influence. In the treatment of all diseases it is essential to know the cause, and the organ or viscus primarily affected.

An idea had suggested itself to him with respect to the present case,—that the liver, in consequence of its diseased state, did not sufficiently or properly prepare the blood for the secretion of the urine, and thus it was that this peculiarly morbid action was set up in the substance of these glands.

With regard to the nature of the fluid which they had poured into the bladder, he should, from his peculiar avocations, leave that in the much more able hands of their Secretary, Mr. Morton, who had investigated it by chemical means, and who would state whether it was actual blood mixed with imperfectly formed urine, or a peculiar dark fluid separated from blood.

Mr. Morton said, that this being the first time that any urine of an animal affected with this disease had come into his possession, he was desirous of examining it, hoping to be enabled, by means of it, to throw some light upon the nature of the malady; he, however, feared that from his endeavours but little would be gained.

The fluid when taken from the bladder was of a dark colour, resembling venous blood mingled with water: it, however, did

not coagulate, nor did any deposit or separation take place after standing for many days. Its specific gravity was 1.016, odour faintly urinous, and it was almost neutral—a very slight alkaline reaction only taking place after acidulated litmus paper had been immersed in it for some time; turmeric paper it did not visibly affect.

If there was any bile in it, this principle had become much changed, for the usual indications were absent, linen not being tinted yellow on being saturated with it; nor did nitric acid produce those changes in its colour which are characteristic of the presence of bile: hydrochloric acid, however, turned it brown, which is sometimes the case with the urine of icterous patients, although the more general tint is green.

Nitric acid, slowly added, first rendered it turbid, and then flakes of coagulum made their appearance. The same change was effected by boiling, when the menstruum was left of an amber colour, and seeming to possess the general characters of ordinary urine, but, which, however, on the addition of nitric acid, afforded but few crystals of nitrate of urea, even after it had been highly concentrated by boiling, shewing a deficiency of this azotic principle.

The coagulum he considered to be albumen mixed with the colouring matter of the blood; although it is often difficult to state what is the cause of colour in the urine, since, frequently, very different tints are imparted, some of which have been referred to a peculiar proximate principle called *melanosine*, or *melanic acid*; and others arise from a change in the constituents of the urine, or from some medicament which may have been administered.

If called upon to give an opinion, he should be inclined to say, that the fluïd consisted of imperfectly formed urine, mixed with imperfectly formed blood; but no coagulation of the latter took place, on account of the salts in the urine preventing it. Probably, after a time, more blood might have been passed, and then it would coagulate.

Possibly the disease may be viewed as a modification of sero-albuminous urine, or a less objectionable designation for it may be *pseudo-hematuria*. Did he, then, consider the malady as one primarily affecting the kidneys? By no means. He perfectly agreed with their President, that it is one depending upon the state of the digestive organs, and particularly the liver; hence the blood became altered in its character, and the kidneys becoming, at length, functionally deranged by the unnatural fluid sent to them, they allowed a portion of imperfectly formed blood to pass through them in an almost unchanged state.

It would be an interesting inquiry, whether the blood abstracted

from patients labouring under this disease presented on its withdrawal, either before or after coagulation, any of the appearances of this fluid; and probably some practical member could speak on this point. He had been informed by one friend (Mr. Simonds), to whom the Association was much indebted, that such is the case.

JANUARY 14th, 1840.

The President in the Chair.

The Secretary said that he had often had the gratification of announcing to the Members of the Association the receipt of communications connected with the onward progress of veterinary science, and demonstrative of the interest felt by the members of the profession as a body in the well-doing of the Association; but rarely had he received one which gave him greater pleasure than that which he was about to lay before them. It was from a pupil then present, who, manifesting that zeal and industry which all of us would do well to imitate, had analyzed a portion of the contents of the bladder exhibited by him on the last evening of meeting. It would be remembered, that he had ventured to state his belief that it was a mixture of imperfectly formed blood and urine: the investigations of Mr. Hughes, he thought, proved the truth of the position laid down by him. He (Mr. Morton) had, however, contented himself with arriving at a simple knowledge of the fact, that blood was mingled with the urinary secretion. Mr. Hughes had taken it as a whole, and his analysis would shew that all the elements of blood were in it. There would be detected by the observant, one or two discrepancies, which it would be, perhaps, necessary for him cursorily to advert to. First, a slight difference in the specific gravity of the fluid; and, secondly, in the reaction induced by it. These differences may be explained by the circumstance, that, when he examined the fluid, it was just taken from the bladder; but when Mr. Hughes did so, it had been exposed for many days to the air, and, probably, had undergone some decomposition.

Mr. Hughes's analysis was as follows:—

ANALYSIS OF RED-WATER.

The urine was from a cow whose case was laid before the Association on Tuesday last. The fluid was of a dark-brown colour.

rather offensive to the smell, slightly acid, and had a specific gravity of 1.018.

Two fluid ounces were evaporated to dryness in a steam bath: the residue weighed 22.5 grs. It was of a reddish-brown colour, tough in texture, and slightly deliquescent. This residue I boiled in three several portions of spirit of wine (sp. gr. .839) These three solutions were mixed, and evaporated to dryness in a steam bath: the extract weighed 2.5 grs. The spirit left undissolved a residue (*a*) weighing 20 grs. The alcoholic extract was dissolved in hot water, and heated, by means of a water bath, to near its boiling point; oxalic acid was added to saturation, and when cold the crystals of oxalate of urea were separated. The mother liquor was again evaporated, and some other crystals separated. From the weight of these crystals I calculated the weight of urea to be 2 grs. There was separated from the urea a dark-coloured fatty matter. The residue (*a*) was treated with water, which fluid dissolved 9 grs., and consequently left a residue of 11.25 grs. (*b*). The last solution I evaporated so as to concentrate it a little. I divided it into two equal portions; the one I tested for the bases, the other for the acids.

To the first portion I added a solution of baryta, acidulated with nitric acid: a precipitate of sulphate of soda fell, which weighed 1.75 gr., equivalent to 1.0 gr. of dry sulphate of soda. I now added a solution of ammonia to neutralize the acid, when a precipitate of phosphate of barytes fell, weighing rather more than 3 grs., equal to 2.0 phosphate of soda. To the solution I now added a solution of nitrate of silver, when there fell a precipitate of chloride, weighing 6.6 grs., equivalent to 1.5 of hydrochloric acid (dry).

To the second portion I added a solution of oxalate of ammonia, which precipitated some lime in a state of oxalate. I now added a solution of the ammoniacal phosphate of soda, when there fell a small quantity of ammonia-phosphate of magnesia. I next added to the solution a small quantity of chloride of platinum, but could not detect the least portion of potassa; so, of course, I conclude that the alkaline base is soda; but as we have no agent that will form an insoluble salt with it, I was not able to insulate it. We have now the sulphuric, the phosphoric, and the hydrochloric acids, and lime, magnesia, and soda.

The residue (*b*) was ignited in the forge fire: the remains weighed 1.25 grain, were attracted by the magnet, were in small grains of a dark colour, and dissolved partly in nitric acid diluted with water. The portion undissolved weighed 5 gr., and consisted, I believe, of a little earthy phosphate and silica. To the solution in dilute nitric acid I added a solution of carbonate of ammonia, and boiled it for a short time: a copious brownish precipitate fell, to

which I added a little dilute sulphuric acid, which dissolved all except a little sulphate of lime. The latter substance being separated, I added a solution of succinate of ammonia (having previously neutralized it), when there fell a precipitate of persuccinate of iron, from which I calculated the weight of iron to be 5 grains. I now added a solution of carbonate of ammonia, and boiled, which threw down a precipitate of carbonate of magnesia. I then evaporated another 2 oz. to dryness: the residue I found to weigh 22.75 grs. This was ignited, and the fixed substances weighed 10.25 grs. I added to this dilute nitric acid: the result was a partial solution, with a rapid escape of carbonic acid gas, arising from the decomposition of some lactate or acetate. The result of this analysis was similar to the first, saving that in this I found a larger quantity of hydrochlorate of lime, and some phosphate or sub-phosphate of magnesia. This increase of hydrochlorate was, I think, owing to a little being taken up with the spirit of wine. There was also a larger quantity of carbonates from the decomposition of lactates or acetates in igniting the mass. The urine coagulates when heated, and this coagulum consists of albumen chiefly, with fatty colouring matter, silica, oxide of iron, and earthy phosphates. The iron, I think, exists in it in combination with animal matter, as modified hæmatosine. The acid reaction of the urine is owing, I think, to phosphoric acid; but from my inability to estimate the weight of soda, I could not satisfy myself on this point.

The relative proportion of the different substances in an imperial pint are,—

Albumen, and other animal matter	112.50
Urea, with fatty colouring matter.	22.50
Sulphate of Soda	10.0
Phosphate of Soda	20.0
Muriate of Soda	25.0
Muriate of Lime	2.50
Oxide of Iron	5.0
Lactate or Acetate of Soda	10.0
Silica, Phosphate of Magnesia, with Lactate or Acetate of Lime and Magnesia	10.0
Loss	7.50
	225.00 grs.

JOHN J. HUGHES.

anuary 11, 1840.

The following Essay by Mr. EVISON, was then read :—

ON INFLUENZA.

Gentlemen, the disease which I am about to introduce to your notice, I have termed Influenza in Cattle and Sheep. My reason for giving it this name, I will hereafter explain; but permit me previously to allude to the neglect of the members of our profession, in not devoting their attention more to the diseases of sheep, and the treatment of neat cattle generally. Until within the last few years, these animals have been left under the care of persons entirely devoid of education, and unacquainted with the animal economy and the operation of medicines.

I always feel a degree of surprise when I reflect, that animals which contribute so much to our domestic comforts, and are so valuable and useful to us, have been so much neglected. The milk of various animals is, perhaps, their most precious product, and seems to be indispensable to man in a civilized state. The cow is perfectly indispensable to our comfort, and almost to our existence! From an early age to a late period of life she plentifully supplies us with a fluid, the use of which, under its various forms, is most admirable, and, as her last gift to man, she becomes his food. No part of her is lost, and, even the very refuse of her frame is converted into articles of usefulness. The sheep both feeds and clothes us. Its woolly covering equally contributes to the purposes of utility and the most refined luxury. It serves to keep the peasant warm, and to adorn the person of the prince. It contributes to a still higher purpose. It furnishes labour to millions—that labour, the produce of which feeds and supports our immense population, and which forms the base of human society. When we reflect that these useful animals—neglected sometimes during health—have, when labouring under disease, been abandoned to the care and treatment of those who have age after age been characterized by their ignorance and brutality, it casts a dark shade on the feelings and the conduct of those to whose care they were consigned by a benevolent Creator.

A new era has at length dawned upon the veterinary profession. Formerly the medical treatment of cattle and sheep was considered by those who emanated from this institution as incompatible with the practice of a qualified veterinarian, and beneath the dignity of a man of education. It were useless now to inquire into the strange and disgraceful causes of this; or, indeed, to think too deeply of its effects. We wonder at the scenes that have passed: common sense and common humanity have, however, decreed that they shall exist no longer. Truly do I exult in the fact, that the

time has at length arrived, when the veterinary pupil must make himself acquainted with the diseases of the cow and the sheep, as well as the horse. He must qualify himself to grapple with all the maladies to which these useful animals are exposed, or he will no longer be considered worthy of the confidence and respect of the agriculturist. May this stimulate every student to pursue the new and interesting and noble path of study and of practice which is opening before him.

I have no doubt that many practitioners now present have had far better opportunities than have fallen to my lot to observe the disease on which I am about to offer some remarks. I am well aware that it puts on different symptoms in different localities and in different varieties of atmospheric influence. I trust that they will come forward and throw some light on this interesting subject.

Causes.—Influenza I consider to be produced by a deleterious atmosphere, the nature of the influence of which I will hereafter endeavour to explain. It is most prevalent during north-easterly winds accompanied by rain. This disease first makes its appearance, and I have seen it prevail most, in the marshes by the sea side. The land is not here usually enclosed by hedges; in fact, there is no shelter for many miles together. The soil is very rich, but after a heavy fall of rain it is covered with wet for a great length of time, owing to the under-drainage being impossible or neglected. Then, I presume, from the decomposition of the vegetable matter underneath, many noxious gases are generated, which, uniting, constitute this deleterious atmospherical agent. This is held mechanically suspended in the surrounding air, until put in motion by the winds, or perhaps, by the rarifying heat of the sun, and then the pestilential miasm covers the surrounding fields, and produces all its deadly effects on the animals that inhabit that locality.

The lying of the animal on the ground, when it is in a wet state, may have a great tendency to cause some disarrangement, functional or organic, in the frame. An exhalation is continually taking place from the skin of the healthy animal. When the body is long kept in contact with the wet surface of the earth, the pores become closed, and the secretion which should be carried off by perspiration is determined to the lungs, or to some other important viscus.

Young beasts, from two to three years old, appear to be most susceptible of this disease, and white or light-coloured ones suffer more from it than others.

Symptoms. The acute stage.—On first entering a field where there are beasts affected with this malady, those which are dis-

eased are found in the most sheltered situation which they can find, and they have a disinclination to join the rest of their companions. On examining them more closely, we find a discharge from the nostrils of an offensive character—the eyes overflowing with tears, and the mucous membranes highly injected—the pulse accelerated—a disagreeable fœtor in the breath—and disturbed respiration. If pressure is applied to the spine of the animal, he will shrink from the touch, and almost fall to the ground. The skin has lost all its suppleness and glossy appearance, which used to be regarded as one of the most satisfactory signs of health—it is now immovable, and adherent to the ribs, and the hair looks dead, and stands erect on the animal's back. The joints are very early involved, and there is a rigidity and awkwardness which the young observer will not readily forget.

If it is a milch cow that is affected, there is, at first, an increased secretion of milk; but, after the disease has existed for a short time, there will be a diminution of this secretion. The beast will also have a slight cough or hoose, accompanied by a rattling noise in the trachea from effused mucus. Abscesses frequently appear in various parts of the body, and particularly about the joints. The parotid and submaxillary glands are often much enlarged. In some cases there is diarrhœa; but in the majority of instances there is costiveness in the first instance, except in young cattle.

In *the chronic stage* the pulse is not accelerated, but indicates debility. The mucous membranes are of a yellow colour, particularly the lining of the eyelids, plainly indicating a liver affection. Constipation is present, and much fever of a low type. The skin gradually becomes very yellow, and adheres closely to the body; the muzzle, ears, and extremities are cold; the muzzle dry, the urine highly coloured, and rumination partially suspended. If it is a milch cow, the milk is also yellow, and of a bitter taste. If diarrhœa should prevail in this stage of the disease, the patient is generally lost.

Treatment of the acute stage.—Bleeding is not recommended, unless the pulse continues to rise, and the breathing becomes very laborious—then, perhaps, I should abstract blood, guided by the character of the pulse during the progress of the venesection, and, perhaps, a little influenced by the age and condition of the animal. There is nothing so important as to husband the vital fluid at the commencement of these diseases in the ruminant. I would next insert a seton in the dewlap. The ointment of hellebore will produce the speediest and most abundant discharge.

If the hoose or cough is severe, I should blister the throat. I

have covered the whole of the trachea with a vesicatory, and with beneficial effect.

As to the medicine, I usually commence with a draught composed of nitre, camphor, emetic tartar, sulphur, gentian, and ginger, in a quart of common water. The animal should be housed, yet have plenty of air, succulent food, and that which is easy of digestion should be given, as carrots, grass, and a little oil-cake, which will serve to keep the body in a relaxed state.

Should the animal experience relief from the medicine, I would repeat it; but if the disease should appear disposed to run on to *the chronic state*, I would not bleed, but I would give half-pound doses of sulphate of magnesia and sulphur, with ginger and gentian, and, after having evacuated the bowels, I would exhibit small doses of calomel with tonics. When abscesses make their appearance, I would advise the application of a mild blister, so as to promote suppuration. As soon as any suppuration appears, the abscess should be freely opened, and when the pus has been nearly evacuated, some tow saturated with digestive liniment should be inserted, in order to keep the orifice open. I have frequently seen the orifice heal up when this has been neglected, and the abscesses form again as large as the first, and prove very troublesome to get rid of. The iodine ointment has always proved effectual in causing the dispersion of these tumours; but I confess that I am not an advocate for the absorption of these enlargements, for they appear to me to be foreign substances thrown out, of which nature seems to want to rid herself; and if they can be carried off externally, it is far better than to allow their absorption into the system.

I remember seeing two cases in the practice of Mr. Hodgson, of Market Raisin, Lincolnshire, in which there were abscesses formed pressing upon the trachea so as almost to produce suffocation. The operation of tracheotomy was performed by him in both, and with perfect success; therefore, in case of these tumours about the throat dangerously impeding respiration, I would advise that tracheotomy should be had recourse to in cattle as well as in the horse.

Post-mortem appearances.—In the acute stage the lining of the trachea and bronchi will be found highly injected, and full of frothy matter. The lungs will be much inflamed, and there will be an accumulation of fluid in the thoracic cavity. The mucous tissues throughout the body will be tinged, and there will be inflammation of the brain and spinal marrow, with an increased quantity of fluid in the spinal canal. The spleen likewise will generally be black, and distended with blood—the rumen full of ingesta, and inflamed.

After death in the chronic stage of the disease, the liver will be found more affected and disorganized than any other viscus: it will be frequently enlarged, and of a light colour, and containing various abscesses. The gall-bladder is invariably distended with bile, and of a very pale yellow colour.

Causes of Influenza in Sheep.—This disease is usually produced by similar atmospheric influence. The sheep in which I have seen the disease most prevalent were kept either on very high hilly land, or down in the marshes; in neither of which places was there any shelter for them. Those that were in a less exposed situation were much less severely affected. This clearly proves that exposure to the inclemency of the weather has a great deal to do with the production of the malady. Sheep on turnips, whether in a sheltered situation or not, appear to be very frequently the subjects of this disease, particularly after a heavy fall of rain, and a frost before that rain.

I presume, from the turnips undergoing decomposition, that there is a quantity of gaseous matter generated, which being inhaled by the sheep, proves noxious to the system, causing irritation and inflammation of the mucous surfaces, and which, if not quickly arrested in its progress, becomes fatal.

I do not think that the lying on the wet ground has so much to do with the production of the disease in sheep as in cattle. My reason is, that the sheep is an animal so covered with wool, that the exhalation from the surface of the body is not checked, as in the ox and cow, by the application of cold. I have frequently seen sheep attacked with this disease after clipping, and particularly if it should be cold and windy weather.

Symptoms.—The animal wanders from his companions—he looks very dull, or the eye becomes overflowing with tears, or entirely closed. A discharge of greenish matter takes place from the nostrils—frothy mucus is emitted from the mouth—the teeth grate—the mucous membranes are inflamed, but not so much so as in the ox, and there is an absence of hoose or cough, yet the heart's action is evidently increased. The animal reels from weakness—he falls, and can with difficulty rise again. In some cases there is constipation of the bowels, but, oftener, spontaneous diarrhœa. Sheep from one to two years old appear to be most susceptible of this disease; older sheep escape. The wool feels dry and harsh, and there is an absence of that glossy appearance which indicates health.

When this disease assumes a more chronic type, the symptoms are, great debility—rumination entirely suspended—the animal appears to have a disgust for food, and is generally found lying down—in fact, he is so weak that he can scarcely stand. The mucous mem-

branes have a white debilitated appearance—the mouth and ears and extremities are very cold, and there is great constipation of the bowels.

Treatment.—To those that are purging, opium with catechu, and gentian and ginger, are to be given. Others whose bowels are torpid should have small doses of sulphate of magnesia and ginger; and, when the bowels are opened, nitre, camphor, and gentian, should be administered. Good effects often result from the application of a blister to the throat. Setons also may be passed over the chest, or along the side of the neck. The abstraction of blood should not be attempted unless the action of the heart is much increased, and care should be taken that no more than is absolutely necessary is withdrawn; for the sheep is an animal that can least of all bear depletion. The blood will be most readily taken from the jugular vein, and it will always be better to abstract blood generally than locally. The patient must be kept in a sheltered and dry situation. When, in the chronic stage, constipation of the bowels is present, the sulphate of magnesia, combined with ginger, may be administered; and, when the bowels have responded, tonics in combination with nitre and ginger. If the animal will not eat, some nutritive liquid food must be forced upon him, such as linseed tea with oatmeal gruel.

Post-mortem appearance.—In the acute form there will seldom be considerable difference in the lesion of any particular organ except the kidneys, which will, usually, be excessively inflamed, but the whole of the viscera of the chest and abdomen will be involved.

In the chronic form the lungs, liver, and kidneys, will be of a very pale colour; the two former having frequently large abscesses upon their surfaces, while much mucus is effused into the trachea, and the thoracic and abdominal cavities are filled with serous fluid. In some cases, however, there will be appearances of considerable disease about the kidneys.

As it respects "*the means of prevention*," I have little to offer. The principal, or the only effectual, ones are change of pasture, and removal to a more sheltered and dry situation. A most important point is the separation of the sick from the sound, on the appearance of the earliest symptom of disease. *It is a contagious disease.* On this point there is no doubt. The animal is particularly subject to the contagion when he has been debilitated by exposure to cold and wet. The suspected invalid being separated from his companions, should be placed under shelter, allowed dry and wholesome food, and have a seton inserted in the dewlap.

To these imperfect remarks of mine I have the pleasure of appending a few observations on this malady by my friend and pre-

ceptor Mr. Darby, of Louth. Although his letter was not written with the slightest intention of being brought before the public, yet the opinions of a practical man will have their due weight.

As for myself I am open to your criticism, which I am perfectly assured will be a candid one. Our mutual hope is, that these meetings may tend to advance veterinary science, and be the means of contributing to the alleviation of the sufferings of a large class of animals, too long neglected by the practitioner of veterinary medicine.

Louth,
January 2, 1840.

"To Mr. S. Evison.

"Sir,—In answer to your letter received this day, and referring to the cause of Influenza, I consider it to be the result of atmospheric influence. The symptoms in acute cases I have generally found to be a closed eye, disturbed respiration, discharge from the nose, with extreme prostration of strength. Pulse from 80 to 100. In this stage you may expect quickly to lose your patient. The post-mortem appearances are engorged lungs, and frequently the vessels of the brain in a state of turgescence, with more or less disease of the whole of the mucous surfaces. The manyplus is very much distended with food, which appears as if it had been in a press.

"In the chronic stage there is the dull vacant eye—extreme debility—the animal generally leaning against the fence with his back up. Sometimes he feeds moderately—at other times not at all; and so he goes on, until ultimately he is worn out with organic disease. The examination after death exhibits sad mischief. The lungs are often adhering to the sides—an effusion of serum, in an enormous quantity, has taken place into the chest—the liver is very much diseased, and, in some cases, I have found engorgement of the spleen with—in both stages of the disease—much frothy mucus in the windpipe. There is also, during life, considerable *râle* in cattle.

"These, I believe, you will find the most prominent appearances in both stages.

"I am your's, &c.

"THOMAS DARBY."

Mr. Hubbick.—Has there been observed by the author of the thesis any particular alteration in the character of the urine?

Mr. Evison.—In the early periods of the acute stage there will be an increased secretion of this fluid; but in the chronic stage the quantity will be less, and it will also be of a yellow colour, arising from the presence of bile.

Mr. Twinberrow considered influenza a somewhat vague and indefinite term, and that, too often, catarrhal affections, particularly if accompanied by much febrile excitement, are designated influenza. Surely some clear distinction might be drawn, and it behoved practitioners to come to a definite conclusion on this point, and not to class other diseases, if deviating a little from the ordinary character of symptoms, as influenza, which he felt convinced had too much of late been the case.

He would ask, if there existed that swelling about the eyelids and head of cattle which characterized this disease in horses; whether the glands of the throat were enlarged, and the serous as well as the mucous tissues of the body involved in the inflammation.

He well remembered the first thesis introduced into the Association by its then President, Professor Sewell, than which nothing could have been more opportune, and he considered the disease essentially to consist in inflammation of the mucous tissues. There was one, however, who took part in that debate; and although he had "passed to that bourne whence no traveller returns," his memory will be cherished by every member of the veterinary profession, and particularly by those who had enjoyed the gratification of hearing him speak on professional subjects. He repeated his assurance, that his memory would be long cherished by all who knew him, and his name handed down to future generations in conjunction with others, who are in their day, as he was in his, the brightest ornaments and chief corner-stones of their profession. He alluded to the late Mr. J. Field, who considered it to be a disease both of the mucous and serous surfaces, and at the same time erysipelatous in its nature; in short, he believed he went so far as to state his belief that true influenza and pure erysipelas were essentially one and the same. But he would ask the author of the Essay, if he had not sometimes met with violent cases that commenced and rapidly ran on to a fatal termination, in which, on a post-mortem examination, it would be difficult for him to place his hand on any part, and say "here disease was not;" cases in which not only the mucous and serous tissues were affected, but also the brain and nervous system, the venous system, the muscular, glandular, absorbent, and tegumental system—in short, the whole organic system. Has he not seen in these extreme cases the muscles, and that immediately after death, disorganized, nay, even gangrenous, and undergoing decomposition of a typhoid character? Some such cases had come under his notice—few, he was happy to say, compared with those of a milder character, and which had terminated favourably. These extreme cases, in his humble opinion, simulated many of those belonging to that direful malady which was raging some few years back in the human subject, the Asiatic cholera; of which disease an eminent physician (whose name does not just now strike his memory) said, that it differed from every other disease with which he was acquainted in commencing where they terminated,—in death.

Mr. Evison had no doubt that, ultimately, the serous tissues become involved, although at first only the mucous membranes exhibited traces of disease. This was proved by the fact of effusion taking place into cavities, and oftentimes into the spinal canal. The submaxillary lymphatic ganglia are always enlarged; and although there is not that œdematous state of the eyelid which is so commonly seen in the horse, the eyes are dull or closed.

Mr. Mackinder had seen a malady similar to that described by Mr. Evison in the fens. There it was called the *chine murrain*, and by some the *running murrain*. It generally shewed itself after a prevalence of cold and wet weather; but he had never observed the glands about the throat to be much swollen. The eyes are inflamed and closed—the saliva secreted in increased quantities—the animal loathes his food, and refuses to join his companions—

the skin is adherent to the ribs, from an absorption of the interstitial cellular substance—it is very painful to the touch, and sometimes sloughs away in patches; this, too, prevents the animal from lying down—hence in this disease he is observed to be always standing. When pressure is applied over the chine, much tenderness is evinced, from which has been derived the name given to the disease. The state of the bowels varies, but the urine is voided in very small quantities for several days before the death of the animal. The muzzle is dry, the buccal membrane inflamed, and, on elevating the tongue, numerous small vesicles will be seen, which, being opened, discharge a serous fluid, and the irritation produced by this may cause the saliva to be secreted more freely than usual, for in this respect the symptoms differ from those described by Mr. Evison, who states the mouth to be hot and dry.

The remedial agents which he had employed were similar to those advocated by Mr. Evison. From the use of the potassio-tartrate of antimony he had experienced the greatest benefit. He gave it in doses of ʒj to ʒij. He had found this disease to be most prevalent in the spring.

Mr. Twinberrow believed the disease described by Mr. Mackinder to be murrain, and which was considered as highly infectious and pestilential. In the fatal cases which he had seen—and he was sorry to say its attacks generally proved fatal—the whole of the external surface of the body is affected; the skin crepitates from an effusion of air into the cellular tissue constituting emphysema, and, on the integument being removed, the cellular membrane is found not only distended with air, but there is also much fluid met with, resembling grumous blood of various tints, and highly offensive. In short, the animal appears one mass of mortification or gangrene. With respect to the internal appearances, he confessed his inability to give a description of them; for, at the time when he had opportunities of witnessing the disease, he was only a youth, and consequently not a member of the profession, while the external parts were too forbidding to tempt him to make any minute examination.

Mr. Dycer had many opportunities, while with Mr. Dick, of witnessing cases of influenza; and, in common with his preceptor, he believed it to be a disease of the mucous membranes of the body in general. In this country, the north or north-east winds are most conducive to its propagation, combined with damp and exposed situations; while in Australia, where the disease prevails to a very great extent, among sheep in particular, it is influenced by the south-east winds, which, from being on the other side of the equator, correspond with our north-east winds. The sudden changes of temperature in the day and night, which are so common in tropical climates, also favour its propagation, which is rendered the more obvious, from the circumstance of the surest mode of cure being the removal of the flock to a situation where they will be sheltered from the south-east wind, and keeping them under cover all night, and not turning them out in the morning until the sun has had time to exert its calorific influence on the surrounding media and atmosphere.

The diseases of cattle and ruminantia in general he thought more likely to assume a typhoïd character than those of the horse, thereby accounting for the various secondary symptoms, such as emphysema of the subcutaneous cellular membrane, loss of wool or hair, or petechial patches upon the skin, which, however, are too often taken for the disease, rather than the effect of the disease. It would be, perhaps, of interest to the members to be informed that a peculiar disease was at the present time raging among cattle and sheep in the north, of which he had received an account from Mr. Dick, and which he would have done himself the pleasure of reading, were it not that a detailed account had not been entered into by Mr. Dick, but more information was promised in a future communication.

Mr. Sibbald believed the disease under consideration bore a strong resemblance in its general features to that which a few years since was so common among horses. The mucous tissues are much injected; there is great prostration of strength, and swelling in various parts of the body. It is the result of a peculiar state of the air, when the blood not being arterialized, arising from the want of oxygen, transudes through the coats of its vessels and the membranes, causing effusion into cavities. It is usually accompanied by symptoms of a low typhoïd character.

The curative means to be adopted, he thought, consisted in the removal of the diseased animals to another pasturage, changing of their food, and giving the potassio-tartrate of antimony. Blood-letting was inadmissible, since by the abstraction of this fluid we only still further debilitated the animal without altering the character of the blood. Now, as this has undergone an important change, and the health of the animal is dependent upon its being perfectly formed, we should be solicitous to bring this about; and how can this be effected unless by the joint influence of pure air and food?

Mr. Dycer.—That the disease depends upon atmospheric influence is proved by the prevalence of it during certain winds, and under certain conditions of the soil. The mode of cure advocated by Mr. Sibbald was, he thought, highly judicious.

The President.—The opinions offered by Mr. Sibbald on the nature of this disease are consonant with science, and, generally, he agreed with him. He should, however, demur as to the cause of the peculiar state of the blood described by him as arising from an absence of oxygen in the air. He believed that during the existence of epizootics and enzootics, direful as the effects of these scourges may be, chemists had found no diminution of this principle; rather, he would say, there was something diffused through the atmosphere too minute or too subtil to be detected by eudiometry. We have a confirmation of this in the propagation of diseases by infection, the effluvium not being recognizable by the nicest tests.

Mr. Sibbald thanked the President for his correction. He agreed with him. Probably there is a miasm disengaged from the decomposing moist vegetable matter by the action of the sun's rays upon it, which is well known to produce fevers of many kinds, as intermittent fever in England, yellow fever in the West Indies, and the jungle fever in the East.

Mr. Litt said, that, although it was true, he had never had an opportunity of studying the diseases to which cattle were subject, under the immediate superintendence of a practitioner of that department of veterinary medicine, yet, having resided for the most part in the rural districts of Cumberland, he had, at one time or other, seen most of the maladies under which these useful animals so frequently suffered, and, amongst others, one strongly resembling that described by Mr. Evison had occasionally fallen under his observation.

He did not, however, agree with that gentleman in considering it as dependant upon miasm; nor with Mr. Sibbald in supposing that a removal to higher pastures is likely to act as a prophylactic; for it is common both in the vallies and on the hills of Cumberland—the former probably the most salutary, and the latter indubitably the most elevated pastures in England. Nor did he consider it by any means as contagious; for it was no uncommon thing to meet with a solitary case in a dairy of twenty or thirty cows. The practice generally adopted there was to bleed largely in the first stages, taking care to follow this up with laxatives, and combating the supervening debility with tonics—a practice so successful that he had never seen a case of failure.

In the district to which he referred—the southern part of that county—the disease is commonly known by the name of "*The Hauk;*" and the prominent symptoms are tumours in the region of the perineum. In cows the udder sometimes becomes swollen, accompanied by emphysematous swellings in

different parts of the body. In conjunction with the usual indications of inflammatory diseases, the throat is also hard and swollen, and the eyes look unnaturally red; added to which there is an increased discharge both of the tears and saliva; from the latter of which circumstances he concluded that the disease derived its name, as "hauk" is a word commonly used in the north of England to express an abundant discharge of the salivary fluid.

In answer to a question from Mr. Cartwright, *Mr. Litt* further observed, that he did not believe this disease to be accompanied by any cough. He was the more confident of the truth of this opinion, as, from the circumstance of his never having met with a disease of the same name in any of the books on "cattle" which he had had the pleasure of perusing, he had been at some pains in making inquiries concerning it from several practitioners who had possessed the very best opportunities of observing it in all its stages, and they were unanimous in affirming that coughing could not be enumerated amongst its symptoms.

Mr. Evison, in reply to questions propounded by members, said, that generally the animal refuses to lie down, from there being so much stiffness about the joints, these being more affected than any other parts of the body. The disease had been most observed by him in common marshy lands after rain, both during the winter and summer, the number of cases increasing as we approach towards the sea. He believed it to be contagious, and to be dependent upon the peculiar state of the air, and engendered by causes which he acknowledged his inability to explain. He had frequently found filaria in the bronchi of sheep thus affected; and sometimes these parasites nidulated in the cellular connecting tissue between the rings of the trachea. The wool, too, fell off: this arising from a determination of blood to other parts of the frame, and the consequent loss of nutriment to the envelope of the body, and possibly also, in some measure, from the well-known sympathy of the skin with the digestive organs.

If inflammatory symptoms ran high, perhaps, in the earlier stages, he might be induced to bleed, being always governed by the state of the pulse; but at no time will the animal bear the loss of much blood, from the prostration of strength being so great. Indeed, it is desirable to avoid depletion altogether, if possible, husbanding rather the resources of nature. The application of pressure over the loins is certainly indicative of disease when the pain is acute, although at most times an animal in health will flinch when pressed upon: it required, however, but little discrimination to distinguish the different sensations induced.

JANUARY 21, 1840.

The President in the Chair.

The Secretary read the following interesting communication from Mr. W. Rush.

Bungay, Jan. 6, 1840.

My dear Sir,—The peculiar epizootic which has been and is now raging amongst neat stock and pigs, in various parts of England, has not made its appearance within the sphere of practice in which I am engaged; but my attention was called, in

November, to some diseased bullocks and pigs at Mr. Thomas Burton's, Langley Grange, and as lately as last Friday, January 3d, to some bullocks, the property of Mr. W. Jex, Toft, both in Norfolk. As I did not attend professionally I can but detail the appearances, treatment, &c. as they were related to me by the medical attendants, and what I saw one day when I visited them.

November 7th, 1839.—Mr. Thomas Burton, of Langley Grange, observed two fresh Devon bullocks (which had been worked on the farm) froth at the mouth, and appear dull and off their feed. At first he thought that they were choaked; but as they were not blown he was not alarmed.

On the 8th they continually kept snatching up their hind legs by turns—did not feed—dribbled and frothed more at the mouth—and frequently smacked their lips together, making a slight noise, as if you gently clapped the fingers of one hand on the hollow palm of the other. Not feeling satisfied as to the cause of these symptoms, and the beasts looking thin, Mr. Burton sent for Mr. D. Hunting, of Loddon, who usually attends his sick stock. Having never seen similar cases, Mr. Hunting very candidly expressed himself somewhat at a loss; and as several more bullocks had become affected, requested that Mr. John Wells, V.S., Norwich, and Mr. R. Duffield, V.S., Bungay, should also be consulted.

These gentlemen found the inferior portion of the dorsum of the tongue and the membrane lining the anterior lip and gums vesiculated in several places. Some of the vesicles being already broken, presented a healthy excoriated—not ulcerated—surface. The discharge from the vesicle was of a thin serous character, and, in the beasts first affected, very fœtid: this arose, probably, from neglect. Their feet were not much noticed at first, although they were evidently lame.

Mr. Wells thought at first that the beasts were affected with blain; but Mr. Duffield imagined it might arise from eating the tops of mildewed turnips. The pulse was 54, very weak, and scarcely to be detected at the submaxillary artery.

Aperients were ordered, and these to be immediately followed, if the bowels responded, by tonics. The liquor calcis chlorinati (℔j c.c. ad cong. j. aquæ) was directed to be applied to their mouths.

In accordance with their united opinion, Mr. Hunting afterwards gave ℥viij magnes. sulph., ℥j sodæ carb., ℥ss gentian. pulv., ʒiij acid. tart. in a state of effervescence. This acted on every beast, as constipation did not attend these cases. The mouths were dressed twice a-day with the liq. calc. chlor., and on the second and third days a draught composed of ℥j sodæ carb., ℥ss

pulv. gentianæ, ʒiij acid. tartarici, ℥ij liq. ammon. acet. c. Oj aquæ was given to each beast; the mouth being dressed as before.

After the third day the vesicles ceased to form about the mouth, lips, &c., but the pain in the feet became intolerable. The beasts were always lying down. On examination, vesicles and excoriated patches were found between the heels and on the cuticle of the coronet; the discharge from which, especially at first, was very fœtid. The chloride was applied, but the beneficial effect produced was not great: it removed the fœtor, but its stimulating properties were not sufficiently powerful.

The bullocks seemed not to lose appetite, nor cease to ruminate; but the distress occasioned by the hard turnip prevented them from eating. The serious loss in condition this would have entailed was remedied by the shrewdness of the proprietor, Mr. Burton, who supplied the deficiency by continued drenchings of a strong decoction of oil cake, employing constantly six men for that purpose.

On the 17th Mr. Duffield kindly invited me to see the beasts with him. On a careful inspection of the character of the vesicles, and the subsequent appearances, &c., and from the attendant symptoms, we were satisfied that the cases were analogous to those described by Messrs. Hill and Welton in our valuable recorder THE VETERINARIAN. As the abraded surfaces did not heal, we (following Mr. Hill) suggested the use of equal parts of tnct. benz. c. and acid. mur.: the effect of this Mr. Burton spoke of as magical; all the bullocks, sixty-seven in number, got well with the treatment above described.

Four cows were similarly affected, and treated the same: they also got well, and never shrunk in their milk.

The summary of the treatment of these cases is as follows:—

First day, ℥viij mag. sulph., ℥j sodæ carb., ℥ss gent., ʒiij acid. tart. in water—the mouths at first dressed with liq. calc. chlor. afterwards more successfully with acid. muriat. and tinc. benz. c. The second and third days, a draught composed of ℥j sodæ carb., ʒiij acid. tartaric, ℥ss gentian. pulv., ℥ij liq. ammon. acet., and the mouths dressed as first day. The feet, which were all affected, after the mouths got almost well were dressed with liq. calc. chlor., and afterward with acid. mur. and tinc. benz., and with good effect.

I am compelled to break off:—in a few days you shall have a continuation of my history.

I am, most sincerely yours,
W. RUSH.

Continuation of Mr. RUSH'S *Narrative.*

Bungay, 13th Jan. 1840.

My dear Sir,—If not too late, I will finish that which I could not send in time last week.

The pigs, which ate the refuse from Mr. Burton's bullocks, were observed to limp, smack their lips, and snatch up their hind legs, in a similar manner to the bullocks. The mouths and feet were quite as much excoriated, and they were removed into a separate yard, where they were supplied with clean wheat straw, and fed with pollard, milk swill, &c.; ʒj of sulph. sublimat. and ʒj madder were given to each pig for two successive days, whether affected or not. The feet and mouths were treated with acid. hydrochlor. and tinct. benz. c., and all soon recovered.

N.B. When removed from the refuse turnips, &c. to soft food, their appetite never failed them.

Of fifteen bullocks belonging to Sir W. Beauchamp Proctor, (which were fed in the park, a corner of which adjoins Mr. Burton's yards) four only were affected similar to Mr. Burton's. One aperient draught was given to each, and all recovered without any further need of medicine, &c.

In concluding my detail of Mr. Burton's cases, I think it right to mention a circumstance which, although only observed by the man attending the beasts, was worthy of notice.

One morning a bullock, which had been attacked two days, ejected from his mouth a pailful of liquid, mixed with small pieces of turnips, &c. The solid parts remaining were pointed out to Mr. Hunting, who noticed a great many pieces of cuticle, resembling that which came from the tongue when the vesicle was broken, and some few streaks of bloody matter. Mr. Hunting suggested whether the whole lining membrane of the rumen might not be similarly affected to the mouth.

No bullocks have been attacked within ten miles of Mr. Burton's at present.

There were sixty-seven Short Horn and Devon bullocks attacked at Mr. Burton's, commencing November 8th and subsiding about the 22d of the same month: from judicious management and nursing these bullocks suffered very little indeed from the epizootic.

On *Jan.* 3*d*, 1840, I saw with Mr. Hunting twelve bullocks, which had for some time been affected at Mr. Tex's, Toft. The treatment of these I could not learn, as I was unacquainted with the person who attended them. They had been bled, and two or three laboured under superpurgation. The beasts were very thin

and food had not been supplied them artificially when they could not eat. The feet had not been dressed, though the animals were lame; and I was not at all surprised at the protracted length of their illness.

One bullock in a separate yard was that day attacked; but from urgency of business I could not see it.

On the same day a neighbour of Mr. Tex—Mr. Samuel Grimmer, of Haddiscoe—had a bullock taken lame in the morning, and off his feed. Mr. Hunting and I went in the evening. His appetite had returned, and, excepting lameness without the snatching up of the legs, he shewed no symptoms beyond a common rheumatic affection, attended by indigestion. Time will prove whether Mr. Grimmer's alarm was well founded or not.

I have heard casually, that Mr. Hinds, a practitioner at Halvegate, has had a great many cases under his care, and that some have died; but I have not been able to collect any useful information concerning them.

Mr. Walne, who collects for Smithfield from Norfolk, informed me on the 4th January, that Mr. Richard Reed, of Freethorpe, Norfolk, had bullocks affected with sore mouths and feet, constipation of the bowels, and that the fæces were black and very fœtid. From this description I suppose that the epizootic is raging there. Mr. W. observed, that it interfered very much with the usual readiness of the beasts for market.

I would, in summing up, observe the difference I have noticed between Mr. Burton's cases and those described by Messrs. Hill and Wetton.

Though the vesicles on the feet were not lanced, the fluid never insinuated itself between the hoof and sensible laminæ, nor burst out at other parts of the coronet, nor did the hoof drop off. *Vide Hill, &c.*

Neither the interdigital nor any other membrane shewed the least appearance of ulceration. Excoriation was the only result. *Vide Hill.*

All Mr. Burton's bullocks were affected in all four feet.*

Mr. B.'s cows shewed no symptoms of garget. *Vide Hill.*

There was no discharge from the eyes, and but little from the nose. The natural colour of the fæces and urine was unaltered. *Vide Wetton, ibid.*

I cannot adduce one instance to establish the contagious character of the disease. Mr. B. had some attacked, which never, in any manner, came in contact with the others, or with what they had touched.

* Mr. Hill had only six cases, &c.

The disease has been and is called, by some practitioners concerned in in its treatment, *blain*. I will just state a few characteristics of blain which I have not seen accompany this epizootic. That kind of blain here alluded to is likewise called gloss-anthrax, from γλωττα the tongue, and ανθραξ a burning coal, signifying inflammation of the tongue. Its symptoms are, loss of appetite—unhealthy appearance of coat—dulness—cessation of rumination—constipation of the bowels—hard, black, and fœtid fæces—constant discharge from the mouth, first clear, then purulent and bloody, and afterward very fœtid,—the tongue projected to the anterior part of the mouth (apparently filling it) by the enlargement of the vessels at its posterior part or root—vesicles are formed at its base, which are filled with a thin fluid, and after that is discharged, a mass of lymph, not perfectly organized, remains. An unhealthy ulcer follows, fever of a low typhous kind seizes the animal, the tongue partially mortifies, and the beast soon dies.

The vesicles on the feet in blain are followed by ulcerations and insinuation of the matter between the hoof and the laminæ, causing often a loss of hoof.

There is always great tenderness expressed in blain, when the stomachs and œsophagus are pressed upon, but in this disease none is indicated.

W. R.

Through the kindness of Mr. Simonds, the following letter was next read to the meeting. It was from Mr. Robert Duffield, V.S. at Bungay:—

I received your kind letter, dated the 10th, and will, to the best of my abilities, forward you answers to your queries. But, first, I will give you my earliest opinion respecting these animals and their diseases, when visited by me on the 10th of November.

On examination, several out of the number then ill, which were twenty-two, appeared very dull; there was considerable flow of saliva from the mouth, with vesicles varying in size on the cuticular lining of the tongue and lips. The pulse was weak, and the breathing little disturbed, except when they were hurried round the shed. I inquired of Mr. B. on what the beasts had been fed. His answer was, on the offal of turnips, some of which had been laid in heaps in the field in which the bullocks were when some were attacked. It directly struck me—surely, this must be the cause—the partial decomposition of this vegetable matter combined with particles of salt, which had been noticed by many persons, apparently blown from the sea-coast during the easterly wind.

Many also had observed leaves, &c. which were decayed, and the water very brackish for a few days at and about this time.

You must bear in mind that the disease, in my opinion, was now purely local, viz. none were lame, and the fever present I considered not to be severe. It arose, in a considerable degree, from mechanical irritation, as the beasts were apparently anxious to feed, but could not.

Mr. J. B. Wells had seen the beasts in question on the 9th.

Mr. W. ordered, and very properly I should say, mild aperients and the free use of that valuable disinfectant, the chloride of lime in solution, for washing their mouths. The patients to be well supported with gruel. Some of them became lame in a few days, and many of the fat ones were attacked in the course of the following week.

Mr. W. Rush now came to assist me for a few months, and on the 17th we saw the beasts: but as Mr. R. has sent a long account to Mr. Morton, which perfectly accords with my ideas and opinion after my first seeing them, I must beg leave to defer saying any thing more about them.

In answer to your queries—

1. Is the disease contagious?—I cannot yet answer this question, as I am wavering in my opinion about it.

2. Does the general health appear to be disturbed previous to the vesication of the mouth?—The general health of some which I have lately seen has been certainly disturbed, and medicine has been given previous to any vesicles being formed. They become lame; but in all I have seen and heard of, the mouths and tongues were sore before they shewed symptoms of lameness.

3. Does much or any fever attend this eruption; and if so, and there should be loss of appetite, does that depend upon the state of the mouth, or the presence of fever?—There is fever present in all, to a greater or less degree: the earlier the vesicles are formed, the sooner they heal, and the less fever there is present. As to the appetite being impaired, I am still disposed to think, as I did at first, that, in the majority of cases, it depends in a great measure on the state of the mouth.

4. Are the feet affected at first, or at any time during the existence of the disease?—As I observed before, the feet are not affected at first: the feet, I have observed, become affected shortly after the vesicles on the tongue, &c. break.

5. Are these bullocks of which you speak fed on turnips, with other food, in order to quickly send them to market?—Mr. Burton's bullocks were fatting, and had the tuber of the turnips, with oil-cake, &c.

6. Have cows, lean bullocks, or young stock, been likewise attacked?—Cows, lean bullocks, and young stock, have shared the same fate in the same locality.

7. Does it spread in, or still confine itself to, any particular district, such as marshy or other land? State the general diet and management of Mr. Burton's bullocks, and whether others differently treated have likewise been attacked.—It has spread in, and still confines itself, with one exception, to marshy districts, as I have only heard of some cases at Mr. Chiver's, St. John's, which soon recovered.

On Wednesday last I accidentally met Mr. Hinds, of Beccles, who kindly invited me to see some beasts. Circumstanced as I have been, I felt anxious to do so.

One case he related, which occurred at Mr. Carpenter's, Aldeby. A bullock was attacked as in all others he had seen, but was, likewise, very much blown; in a few hours the hoove subsided, by medicine being administered,—extreme swelling of the throat extending down the neck then appeared. This case terminated fatally in a few hours. The appearances after death were those of the disease termed garget.

I should also observe, this beast was removed from the others, and none have since been affected.

I am not disposed to think this a true case. The bullocks and cows of Mr. Mathews, of Ringsfield, amounting to ten, have, with some pigs, been likewise affected: one cow that had laboured under black water, and had much medicine, and got well of that disease, has not yet been attacked, although constantly with those affected.

Mr. Hind's son, of Halvergate, has attended upwards of 300 in that neighbourhood, pigs and sheep. His apprentice, they say, was ill for four or five days with a similar affection, viz. the vesicles on the tongue, fever, &c.

I sincerely hope you will excuse all faults, although numerous they be. From application and perseverance in communicating with you, I may become better able to write on subjects of pathology; at least, I hope so.

Mr. Ernes now opened the debate with the following valuable observations:—

This epizootic is well known in Germany and France, and it should not be confounded with the local diseases of the feet, such as foot-foul, and the inflammation of the biflex duct in sheep. It attacks cattle, sheep, and swine, and bears a strong analogy to the aphthæ in the mouth of horses and cattle: in my opinion they are the same diseases, only differing in their seat. I have not seen the complication of the two together, as seems to have been and is the case in this country.

Its scientific name in Germany is *claudicatio epizootica Adami*, it having first been described by this author. Its symptoms are dulness, loss of appetite, slow and suspended rumination, shiverings, with an increase of tempera-

ture, afterwards a dry nose and mouth and costiveness, and when much inflammation, the urine is of a dark brown transparent colour, and small in quantity. There is a quick pulse, and increased respiration; these symptoms are sometimes so slight that they can hardly be observed; but the more violent they are, the intenser will be the exanthematic affection of the feet, which appears about the second or third day, in the form of blisters or vesiculi about the coronets and the interdigital space. After the eruption, the symptoms diminish, the appetite returns, and the disease appears from the seventh to the eleventh day.

Sometimes the exanthema does not assume the form of blisters, but oozes out, similar to the grease in the horse. At other times an abscess is formed between the toes, and if no timely issue is made, the matter will corrode the ligaments, cartilages, and bones, and often terminates by the loss of the hoof; but if the eruption partakes of the characters of erysipelas, it then speedily runs its course, and terminates in gangrene and death. A specimen of this was shewn to me by Professor Sewell some time ago. The treatment adopted in Germany is both hygenic and therapeutic—a clean airy stable, a generous diet of succulent and easily digestive food, and attention to the natural functions, promoting them by laxatives, such as sulphate of soda, or magnesia and sulphur, to promote the action of the skin. Bleeding may be necessary if the inflammatory symptoms run high, and the animal is fat.

In regard to the local application: If the exanthema is considered as the metastasis of the disease, the treatment must be such as will allay the irritation and promote the discharge. All repellents should be carefully avoided. Fomentations, cataplasms, the removal of the parts of the hoof where the sinuses extend under it, thus affording free outlet to the matter, should be used. A little digestive may be necessary, and afterwards the sulphates of zinc and copper. In all this we must be guided by circumstances. This is the substance of the information I have been able to collect on this epizootic, called in Germany the *klauenseuche*, and in France the *pieten maligne*.

Mr. Evison could not think that salt was likely to produce this disease; but would rather tend to prevent it. In certain states of the air, however, salt may be carried by the wind many miles inland.

Mr. Simonds.—The land that was particularly referred to was that over which the sea flowed at every rise of the tide. These were properly termed salt marshes, and the herbage was more or less covered with salt. The salt emanations from this ground might be carried to a very considerable distance, and even a considerable elevation.

Mr. Ernes was inclined to imagine that the loss of appetite which accompanied certain stages was nothing more than soreness of the mouth; but in the cases to which he just now referred as existing abroad, there was not any soreness of the mouth. In his cases also all four feet were attacked, but the hinder ones more violently than the fore ones.

The President.—From these statements, it seems that actual *loss of appetite* is an inappropriate term. The refusal to feed, and the loss of appetite, may be, and are, very distinct things. Drenches of good gruel should be administered, and the condition of the patient will be very little impaired.

The Secretary.—The author of the Essay will, perhaps, explain the post-mortem appearances of this disease.

Mr. Evison.—The part most affected was the spinal marrow; it was in nearly a liquid state. There was very little synovial fluid in the joints, and that in a partially coagulated state. The ligaments and tendons were also in a very diseased state, and accumulations of purulent matter between the claws. Almost every part of the frame was occupied by serous fluid.

Mr. Simonds.—As to the loss of appetite, did it appear to be dependent on

the state of the mouth? Mr. Duffield states distinctly that it was so. Was there desire for food, but incapability of mastication?

Mr. Evison was inclined to be of the same opinion. Did Mr. Ernes say that there was alteration in the quality of the milk, and, sometimes, suspension of it?

Mr. Ernes.—Yes; and the priests forbad the use of the milk.

Mr. Evison never saw any alteration in the appearance or quality of the milk.

Mr. Ernes certainly had, among the German cows; and it became of the very worst quality. There was loss of appetite, rumination nearly suspended, and this not combined with any affection of the mouth, with any blisters of the lips, but proceeding from fever. The animal did not appear to suffer any great pain.

The President.—In the cases at Mr. Rhodes's dairy, none of the cows seemed to lose their appetite until they had been worn down with pain and nervous irritability.

Mr. Ernes had observed that loss of appetite always preceded the disease; but when the breaking out appeared, the appetite returned. This is the great and overlooked distinction. In all the cases which he saw at Dusseldorf and Berlin, and in his communications with the veterinary surgeons, loss of appetite was always one of the first symptoms, with costiveness, and the discharge of urine of a transparent brown colour.

Mr. Twinberrow.—Did Mr. Ernes see any post-mortem examinations while abroad?

Mr. Ernes.—No: nor did he hear of any who had witnessed them; for that which he had described was the usual character and termination of the disease.

Mr. Twinberrow.—Has Mr. Stavely examined any animals after death?

The Secretary did not know; but he had hoped that Mr. Stavely would have given the Society a paper on the subject. He has promised to do so, and the subject will not be exhausted to-night.

Mr. Twinberrow could not help thinking that some of the internal viscera were first affected.

A Member had examined with Mr. Stavely the foot of a diseased cow; and from all the previous symptoms, and all the post-mortem appearances, it was very similar to foul in the foot, and prevailed in wet seasons, and for a considerable time. The leg and foot were swollen, and ulceration proceeded until the loss of the hoof. Caustic applications had been used, and the rope drawn between the claws. After this there was sloughing and general loss of flesh, and that particular quarter was more evidently diminished, and the secretion of milk was suspended; and also, as far as the fetlock, there was ulceration and discharge of synovia.

Mr. Dycer was of opinion that it was not a constitutional disease. No constitutional symptoms were seen. He would ask a question of his chemical friends. As this disease is oftenest seen after salt has been thrown on the land, is it possible that the salt can be decomposed, the soda absorbed, and the muriatic acid left on the herbage?

Mr. Ernes referred to the distinction which had lately been established in France between the different diseases of the foot. It was too long to introduce then, but it might be serviceable to the English practitioner.

The President remarked, that it was unfortunately the case, that the names which were given to too many diseases to which the horse and other animals were subject threw little light on their real nature; bearing in mind that when inflammation or disease has been set up in any organ, it will gradually go on to assume a very different type from that which it possessed in its early

stage. If we wish to ascertain the cause of any affection of a part or organ, we must weigh well the symptoms existing at first, at the very earliest period; because effects become causes of subsequent effects: hence the similarity and general appearance of the feet in these cases to that which is termed foul in the foot, and which, in many cases, is foul enough: but from what he has heard to-night, and from the perusal of the various letters, and also from the various questions, so highly creditable to the Institution, and from his own experience in cases that have been under his own experience, or in which he has held consultation with others,—weighing all things together, it is clear to him that this is an affection constitutional in its nature, and referrible to some state of the atmosphere; and that a certain analogy exists between the affection among cattle which has existed for several months past, and that direful malady which prevailed among our horses a few years ago. It is not so fatal now, on account of circumstances which we cannot pretend to develop, and, possibly, in some degree, because we have better learned how to treat it.

There is, indeed, some difference between this malady and the influenza in horses. The mucous membranes was the primary seat of disease in the horse; and the other membranes most affected were the respiratory, the conjunctival, and the buccal, but not to the same extent as they are now prevailing among cattle. The primary symptoms are essentially the same, but varying according to certain idiosyncrasies in the different animals. The membranes most affected are the same in both. There is a peculiar state of the blood—a peculiar state of the mucous membranes, disposing them to be more or less affected, or not affected at all by the animal poison.

In cattle there is a peculiarity which was little observable in the horse—the inflammation of the foot; but the other symptoms almost universally preceding this, and by some unknown agency, prepared the foot for this deleterious impression. Sufficient observation has been made to ascertain that this is a disease altogether different from *Foot Rot.* A little careful observation will convince us that there are no symptoms of a mere local affection. The locality has nothing to do with it. It appears in the house, in the straw-yard, and in the fields; in different positions, and in different kind of feet. It is a disease referrible solely and alone to a peculiar state of the constitution, and that again referrible to a peculiar atmospheric agency.

This epizootic is not so fatal, because it does not primarily attack, or not attack at all, the membranes which clothe the air-passages. Hence also, it yields so readily to the remedies employed. They are simple medicines that we give internally, and they are simple applications with which we combat the external disease.

The thanks of the Association were then voted to Mr. Stavely for his specimen, and to Messrs. Rush and Duffield for their communications, after which the meeting was adjourned; and the Certificate of Membership was awarded to Messrs. Hinge, Law, and Shaphard.

JANUARY 28, 1840.

The President in the chair.

Mr. Sawyer was elected a member of the Association.

A most singular specimen of obstruction of the bronchial passages had been laid on the table on the preceding evening. A cow belonging to the Duke of Northumberland suddenly appeared to be somewhat ailing, yet not so as to alarm the steward, and no remedial measures were taken. On the following morning she was somewhat worse, yet there was no marked symptom of illness; but, having lost several cows by dropping after calving and other diseases, he gave her a pint of castor oil; after which a veterinary surgeon bled her, and gave her another pint of oil. In the afternoon she was worse, and Mr. Boughton, of Hounslow, was sent for, who gave her some medicine, but did not think that she was in danger. In the next night she calved, and twenty-four hours after her calving she suddenly dropped. She was perfectly paralytic. The usual symptoms were apparent, and proper means were adopted; but she died in about twenty-four hours after she went down. Mr. Simonds, of Twickenham, was sent for, and requested to conduct the post-mortem examination.

The contents of the abdomen and the pelvis were perfectly healthy; but the thoracic cavity presented a singular appearance. The lungs, at first inspection, appeared to be completely gorged; and on cutting into them, and opening the trachea, the respiratory passages, from the larynx to the minutest ramification of the bronchi, were filled with the imperfectly masticated food of the rumen. So violent appeared to be the inverted action or inhalation, by which all this was strangely effected, and, doubtless, the patient destroyed almost in an instant, that a portion of the epiglottis and larynx was forced a considerable space down the trachea.

Mr. Simonds placed this morbid specimen before the Association as an unique one, and for which he confessed that he did not know how fully to account.

Mr. Cartwright had seen an accumulation of wheat in the lungs of a cow, and which seemed to have been gradually collecting. Portions of it are evidently inhaled in cases of long illness, and when the epiglottis is weakened or paralysed.

The President had seen some cases in which portions of food had been found in the bronchi.

Mr. Simonds.—But these were more chronic affections. Here the *hay*, for that was the material, seemed to be at once and forcibly driven into the minutest ramifications of the bronchi.

Mr. Cartwright.—In these more chronic cases the cattle obstinately lie down, and nothing will get them up again.

Mr. Simonds acknowledged that the observations of Mr. Cartwright were valuable, as shewing that, to a greater or less extent, this had been before observed; but the cause of the sudden previous collapse of the lungs, and the immediate and violent dilatation of them, and the forcible entrance of the food from the atmospheric pressure—there was more about this than his philosophy could account for. He hoped that other practitioners now present, or hereafter perusing the record of to-night's proceedings, would contribute the result of their experience.

Mr. Cartwright, although he had found this wheat in the air-passages, had never seen that difficulty of respiration which might have been expected, and which seemed necessary to account for it. They usually become almost insensible before death.

Mr. Evison.—This is never found in a slaughtered one. It is only just before the animal dies that this mass accumulates.

Mr. Twinberrow has seen these accumulations; but he had connected them with too much or clumsy drenching, or too thick a substance being mingled with the drench.

Mr. Simonds attached much weight to this observation of Mr. Twinberrow. He has often wondered that more accidents have not occurred, when he has witnessed the rude manner in which drinks are often given. If there is any portion of the pellet remaining in the mouth, or prepared there for the next act of rumination, it may be very readily forced down the trachea. This was not the case here. Another cause must be sought for this strange distention of the bronchi; and he repeated, that he was unable to assign a satisfactory cause.

Mr. Simonds next exhibited the brain of a lamb which was taken from a ewe that died in parturition. It contained an hydatid perfectly formed, and of considerable size, lying upon the cerebellum. This, he believed, might go to account for some of the strange cerebral diseases to which lambs were sometimes subject.

He also requested the attention of the meeting to the gravid uterus of a ewe that died in consequence of a singular false presentation.

An Essay was then read by Mr. J. Bowles, of Cambridge, on

THE ANATOMY, PHYSIOLOGY, AND PATHOLOGY OF THE MALE AND FEMALE ORGANS OF GENERATION.

[Mr. Bowles being, by unavoidable circumstances, compelled to return home, instead of remaining to defend his thesis, we will only transcribe the latter and more practical part of his Essay.]

Parturition.—Its premonitory symptoms are, an enlargement of the udder or lactiferous gland, and, sometimes, milk may be expressed from the teats; the vulva protrudes, and the tail is erect, accompanied by a heaving of the flanks, and some acceleration of the pulse. The painful contractions of the uterus call in the aid of the

abdominal muscles; deep inspirations are made to enable the diaphragm to assist in forcing the uterine contents backwards, by which the mouth of the womb dilates, and thus ruptures the chorion.

The hind legs are now let out, and planted wide apart, in order to form fixed points for muscular exertion. The membranes protrude in the form of a bladder, which, bursting, often brings with it the young one. Also the descent of the animal generally ruptures the cord, and is accompanied by the escape of the fœtal urine. The secundines, commonly called the after-birth, accompany the foal, and when this is not the case they come away soon afterwards.

The operation of embryotomy in some cases may be requisite, either from weakness of the mother, monstrosity on the part of the foal, or from a very narrow pelvic opening, or other causes; consequently no effort on the part of the animal being available, it must be dismembered. A concealed bistoury or other instrument must be passed into the uterine cavity—the limbs detached one by one, and the size of the head lessened if required.

When the head has been lessened and brought away, it will probably be necessary to contract the volume of the chest, which may be accomplished by cutting the cartilaginous extremities of the ribs, detaching the thoracic viscera, and crushing the empty thorax; then, by the introduction of the hand or the hook, the remainder of the body will offer little resistance or obstruction. Fortunately, however, this operation is seldom required in mares, though they are so much more the objects of strict domestication than horned cattle, who frequently require the assistance of the veterinarian during difficult parturition. These cases more frequently terminate fatally in the mare than in horned cattle. The patient should be kept warm—frequent injections of warm water or of warm gruel should be thrown up, and she should be allowed plenty of warm gruel to drink. The practitioner must be guided by the symptoms as to whether farther medical aid will be requisite, as it is difficult to point out any definite line of treatment, the symptoms presenting themselves in such numerous and varied forms.

Not being placed in a great breeding country, I have not seen many cases of parturition; however, I will take the liberty of transcribing one or two, although I dare say many of my fellow students could give much more information on this subject than I can. I throw myself, however, on the kindly feeling of my companions, and trust that my imperfect Essay will call forth from them such observations as may be of practical use to us during our future career.

The first case which I introduce to your notice occurred about twelve months since, in which the mare was attacked by Uteritis after premature parturition. The symptoms were an increased

pulse, nearly 70—respiration rather laboured and much quickened—extreme pain and irritability—the animal lying down at intervals, but almost immediately getting up again, standing with the hind legs quite apart, and almost continually looking towards the seat of pain—the extremities cold, and the mouth dry and parched.

I bled her largely, and gave her a small dose of aloes—ordered frequent enemas of warm water, and gave gruel to drink: the extremities were bandaged.

In about three or four days metastasis took place, the inflammation was removed to all four of her feet, and the pulse was increased to upwards of 100. The respiration was exceedingly laboured—a cold sweat poured from her; she was continually lying down, and I despaired of my patient. I, however, again detracted blood, and gave another dose of aloes, and placed all four feet in cold bran poultices. To my gratification, the pulse on the next day began gradually to subside, and continued to do so. The clothing which I had ordered for her restored warmth to the skin, and after a few weeks she got perfectly well, except that there was considerable disorganization of the horn of the feet, and particularly of the fore ones, from, as I supposed, a partial separation of the laminæ. She was perfectly well and at work when I was last at home.

Another case occurred in a blood-mare, the property of a gentleman, near Cambridge. I had attended this mare for three or four successive years, and, just previous to parturition, she was attacked by a dropsical swelling to an immense extent in all four extremities, as well as in the abdomen. This was attended by loss of appetite, a weak quick pulse, and apparent dulness and anxiety. She was kept on the best of food, and was not restricted as to quantity. I knew not to what to attribute this, except to a peculiar idiosyncrasy.

I punctured the integument under the abdomen and about the extremities, and large quantities of serum issued from the wounds. I gave tonic medicines, with a diuretic or two, and just sufficient aloes to open the bowels. I kept her well clothed, and in a large loose box, and gave her plenty of gruel, and, occasionally, she would eat a carrot or two.

For three years successively she was attacked in this way, but the parturition was without difficulty or need of assistance, and she always recovered immediately.

On the fourth year she was attacked as usual, only more severely, and, the same treatment being pursued, she foaled without difficulty. She afterwards lay down, and remained down some hours; she then got up for a short time, and then lay down again to rise no more.

In another case of parturition in a mare, the property of a farmer in Hertfordshire, after every means had been adopted to assist the mare to parturiate, and as much strength was exercised as it was thought advisable to use, it was deemed prudent, in order to save the mare, to dismember the fœtus, which was done, and the placenta taken away. She appeared to be doing well for three or four days, when she was attacked with inflammation of all four feet, and was treated as described in a former case, and eventually recovered her health, but was always lame, from disorganization of the feet.

Another case of parturition, and the last which I shall mention, was that of a brood mare, the property of a gentleman living at Bennington Park, Herts. She was taken ill in the night, and all the usual means of effecting a delivery were employed without avail.

The colt having been got by a very valuable horse, and the leap having cost twenty-five guineas, it was deemed advisable to acquaint the gentleman that it would be impossible to get it away alive, except by the Cæsarean operation performed immediately after the death of the dam. He wished that every means should be taken to save the foal: the mare was accordingly knocked on the head with a heavy hammer, and, the moment she was down, the parietes of the abdomen close to the transverse processes of the lumbar vertebræ were laid open, and the foal taken out. It was a very large one, and was upon its legs in less than an hour after the death of the dam.

The gentleman happened to have another mare that had a foal. It was held to her, and sucked, and eventually did well. At two years old it was castrated, but it did not make a very fine horse, although it was an immensely large foal.

There are other diseases of the female genital organs, but they are not of very frequent occurrence; I shall not, therefore, offer any observations on the subject, fearing that I may have already too much trespassed on your valuable time.

The genital organs of the male are subject to numerous diseases, which are generally brought on by artificial means, or by accident rather than by natural causes. Most of them are traceable to castration. Among these is scirrhous cord, accompanied often by great inflammation, loss of appetite, increased pulse, and general emaciation. The best treatment is that adopted at the College, viz. to remove the scirrhous portion of the cord—to inject solutions of sulphate of zinc—to employ digestive ointments or other applications—and to bleed and give physic, in order to prevent the extension of the inflammation, which sometimes reaches to the abdomen, and produces peritonitis, and at other times terminates in great emaciation and death.

In these cases I should, in the early stages, bleed largely, and give purgatives, plenty of warm gruel and warm clothing, and, if the symptoms afterwards were more favourable, tonics.

Tetanus is an occasional result of castration.

I will not, however, detain you with any account of the symptoms and mode of treatment of this dreadful and untractable malady, but hasten to the close of my Essay.

A case occurred in my late uncle's practice, in which the testicle became perfectly ossified, and produced the death of the animal.

In other cases the penis becomes diseased, and requires all the attention of the veterinarian. I have met with two of these cases.

The first was in a very fine stallion belonging to one of our employers. The penis was greatly enlarged, fungous and cancerous, and perforated by innumerable small orifices, discharging an ichorous fluid most offensive to the smell. The disease extended to the distance of seven or eight inches from the extremity, so that, when he voided his urine, it passed out at numerous apertures, resembling water from the rose of a water-pot. It did not at all affect the animal's general health.

This disease had existed for a considerable time previous to his being brought to our establishment for treatment. It was deemed folly to waste any time in the application of unguents or lotions. The animal, therefore, was cast, and the clams were placed about an inch above the diseased part, which was then cut off. The remaining portion contracted into the sheath, and scarcely any hemorrhage ensued from the operation. We gave a dose of physic, and ordered him to be kept quiet: a solution of the sulphate of zinc was applied to the amputated part, and he soon got well.

Another case of a similar description occurred, in which the same treatment was pursued, the disease being of the same character, but not so virulent; but the extremity of the penis had so much increased in size, that the animal could not draw it within the sheath. We excised between four and five inches of the penis, but the muscles had become so powerless, from their long ineffectual attempts to retract this organ, that a small portion of it still protruded. There was much more hemorrhage than in the first case, and the blood did not so readily coagulate. He continued to bleed for nearly an hour, but otherwise the case terminated remarkably well.

And now, having completed my arduous, although pleasurable, task, I submit it with all its faults, which I am conscious are not a few, to your candid consideration and criticism. Believe me that my study shall be, as it has hitherto been, to elevate the profession to which I have the honour to belong.

FEBRUARY 4, 1840.

Mr. Dunn, V.P., in the Chair.

Mr. Stevens, of Newmarket, V.S., and Mr. Bainbridge, V.S., of Saffron Walden, were elected Members of the Association.

Mr. Daws introduced the following case of FUNGUS HÆMATODES, which occurred during the last summer in a pony belonging to Lady Borough. It grew from the left branch of the lower maxillary bone, close to the first molar tooth, and produced some prominence on that side of the cheek, being about the size of a hen's egg. It was irregular in shape, and ulcerated in various places, and discharged a very offensive fœtid secretion, sometimes mingled with blood. The animal had been seen by an eminent member of the profession, who thought that considerable danger would accompany an attempt to extirpate it. He, however, was induced to venture on an operation, and dissected it away close to the bone, freely applying the lunar caustic to the part immediately afterwards. There was very little hemorrhage, and that soon ceased. There was no new growth, but the wound healed in the course of a few days.

Mr. Daws next referred to a case of scirrhous cord in a horse, with an abscess in its centre, from which a sanious discharge was continually escaping. Professor Spooner recommended an operation, which was accordingly performed, and the horse has done well since. It was supplied with one very large vessel, and in the centre a cavernous opening, which, in their opinion, communicated with the scrotum externally.

The Secretary said, that there was a case not long since in the infirmary which admirably illustrated this of Mr. Daws. Mr. Spooner had here recommended a portion of the cord to be excised, and the horse was now in a state of perfect health, although it had been previously contemplated to destroy him. This shews us of how much value the surgeon's knife is, when guided by skill and discretion.

Mr. Daws.—This was an old horse, and from the time he had been in his present owner's possession there had been a discharge from the scrotum. There was much difficulty in drawing down the cord from the ring. He employed torsion here, and the edges of the wound were held together by several sutures. On the following day these were removed, and nothing more was done than keeping the parts clean with warm water. There is now very little appearance of any operation having been performed.

The following Essay by MR. HUGHES was then read :—

ON THE CHANGES WHICH THE BLOOD UNDERGOES IN RESPIRATION, AND THE SOURCE OF ANIMAL HEAT.

The subject which I have chosen for my Essay is an abstruse one, and by some I may be considered bold for selecting it; but if I may be wrong in any division of my thesis, I shall throw myself on the leniency of the Association, and doubt not, by your kindness, I shall be led into the way of truth. To those who would accuse me of boldness I would answer, that it is from an earnest desire to favour the advancement of this Institution that I have been induced to appear before you this evening.

Man is induced, from a variety of reasons, to remove from one climate to another, and with him emigrate many animals placed more immediately around him, and intimately connected with his welfare. In order to guard against this change of climate, and to counteract the effects of the change of seasons, he, in common with them, is provided with a means admirably adapted to the purpose: this function is animal heat, which is here a compensatory means. Animal heat, then, becomes one of the greatest blessings that could be bestowed on a living creature.

"But what created mind can comprehend their number or the wisdom infinite?" By it we are enabled to preserve a uniform temperature in the scorching sun of the torrid or the frozen regions of the frigid zone.

I shall divide this paper into three parts, in the first of which I shall briefly speak of the atmosphere; in the second, the changes which the blood undergoes in respiration; and, lastly, the source of animal heat.

The atmosphere that surrounds our earth, and which is calculated to extend about forty-five miles above the level of the sea, is composed principally of two gaseous fluids,—oxygen and nitrogen; the former in proportion to the latter as 23 to 77. There is, generally, 1000th part of carbonic acid, with a varying proportion of aqueous vapour, and a small quantity of sulphurous acid and sulphuretted hydrogen gases; but, as these are not immediately connected with my subject, I shall pass over them in silence.

Oxygen and nitrogen, as they exist in the atmosphere, are mechanically mixed, but not mechanically combined, as some imagine. They are diffused through each other by a law peculiar to gaseous fluids in general.

Nitrogen, or, as it is sometimes called, azote, is a colourless, tasteless, and inodorous fluid, permanently elastic, and a non-supporter of combustion. It is lighter than atmospheric air in the

proportion of 972 to 1000. It will not for the shortest period support animal life or combustion; not from any specific deleterious effect, but from an absence of that all-important and indispensable principle, oxygen.

Oxygen, like nitrogen, is void of colour, taste, and smell. It is also permanently elastic, but here it loses its similarity with that gas, for with the next principle we find it permanently endowed, viz. a capacity of supporting animal life and combustion. Of all aëriform fluids there are none so well adapted for supporting combustion. It is of all necessaries the most indispensable, for without it, we, and all the numerous classes of animals placed beneath us in the scale of creation, might breathe in vain, and that breathing would soon cease. Thus our earth would quickly become one wide and extensive desert.

We might find some other supporters of combustion, but where must we seek for a supporter of animal life? We may find media in which combustion may be carried on; but where shall we obtain a fluid that will cause "the lungs to heave, and the heart to throb?"

The specific gravity of oxygen is 1.11. By being mingled with nitrogen, oxygen becomes more minutely divided, and on that account is in a more favourable state for combination with the blood; and, indeed, as we are now organized, we should die from vascular excitement and irritation, if the oxygen were materially increased.

Respiration consists of an alternate contraction and dilatation of the chest, by which a quantity of atmospheric air is first taken into and then expelled from the lungs. The amount of air inspired varies with the different breeds of horses, the better kind of hacks inspiring more than the heavy cart breeds. As an average we may take 107 or 108 cubic inches. A short time since, I had the pleasure of assisting our esteemed Secretary in a few experiments, which I believe were as delicately performed as possible. By means of Read's Inhaler and an elastic bag, we repeatedly collected the air given out from four expirations, and we found it to measure 430 cubic inches. Out of these 430 cubic inches of expired air we obtained 7.53 cubic inches per cent. of carbonic acid, that is to say, from 100 cubic inches we obtained 8 grains of carbonate of lime, equivalent to 3.5 grs. of carbonic acid, which measures 7.53 cubic inches. The chief of these experiments were performed on a horse that is now in the infirmary with vesicular calculus, and his respiration was as nearly natural as possible.

Ere I proceed to speak of the changes the blood undergoes in respiration, I will briefly treat of endosmosis and exosmosis (an illustration of which is on the table before you), they being in a

particular manner connected with my subject. Magnus found that, where a bladder of carbonic acid gas is suspended in a vessel of hydrogen, a most interesting phenomenon takes place—the bladder is found to increase in size, and, if allowed to remain, will ultimately burst. If the bladder is removed before this takes place, it contains, beside carbonic acid, a large quantity of hydrogen.

If, instead of these two, we employ gases of nearer specific gravities, the result is different; for, instead of a bursting of the bladder, we merely find an exchange of places: the lighter of the two permeates the bladder to the denser gas.

This obtains in carbonic acid and atmospheric air. The air enters the bladder by endosmosis, and is replaced by an equivalent volume of carbonic acid by exosmosis. Endosmosis signifies "a power from within;" and exosmosis, "a power from without."

The actions of endosmosis and exosmosis go on until the gas within and without are of the same specific gravity.

We will now apply these actions to the respiration. A quantity of air is taken into the lungs: the venous blood, highly charged with carbonic acid, is ramifying within the capillaries of the pulmonary artery upon the walls of the air-cells. Endosmosis commences: the oxygen enters the capillaries of the pulmonary vessels, and is carried on with the blood to the capillaries of the veins, and thence to the heart, to be distributed to all parts of the system. At the same time that endosmosis is going on, so likewise is exosmosis; and it is wrong to think that these actions take place only in inspiration, for, when once the lungs have been filled with air, it is impossible to expel the whole of it again. This will account for the quantity of carbonic acid expired and oxygen absorbed being nearly equal.

It will be seen from what I have already said, that I believe the oxygen is absorbed, and that it does not unite with carbon in the air-cells. The blood now being arterialized, proceeds to every part of the body to repair the waste from absorption, and to supply the different secreting organs, and, in its turn, to be converted into venous blood, which is again purified by re-vivification in the lungs.

The specific gravity of arterial to venous blood is as 1047 to 1050; and its capacity for carbonic, according to Dr. John Davy, as 10.11 to 10.10. Arterial blood is of a florid red colour, and is generally considered to be about 1 or 1½ degree hotter than venous. The arterial blood having to build up the different parts of our frame, having to supply membrane with matter peculiar to itself, having to render bone to bone, and muscular fibre to muscle, it becomes charged with carbonic acid; its solid parts become diminished, its nutritive power is gone, and it is necessary that it should undergo purification in the lungs. Venous blood is of a dark colour, which

is owing to, I believe, an union that takes place between the hæmatosine or colouring matter, carbonic acid, and some of the salts of blood. By the absorption of oxygen, the salts are enabled to react upon the colouring matter.

"There is," says Paley, "what may be called the chemical part of our frame, of which, by reason of the imperfection of our chemistry, we can attain to no distinct knowledge, either in degree or kind, similar to that which we possess of the mechanical parts of our frame. It, therefore, does not afford us the same source of argument as that which mechanism affords, and yet it may afford an argument in a high degree satisfactory." Although we may not have demonstrative evidence of what is taking place internally, still by attention and perseverance we may arrive at a very satisfactory conclusion.

I will now relate a few experiments that I performed to illustrate my subject, on the performance of which I bestowed considerable care and attention.

Experiment I.—I received a quantity of venous blood from the arm of a man into a common earthenware bleeding-bason; and when the serum began to separate from the crassamentum, I inserted a thermometer into each, and found the difference in temperature to amount from 3° to 7° or 8° F., the clot possessing the greatest temperature.

II.—Having collected some oxygen gas, I filled a small decanting jar with it; I then introduced a clot of dark venous blood, and a test tube containing lime-water. The gas was secured by being tied over with moist bladder, smeared over with lard. By gentle agitation, the blood quickly became florid. At the expiration of an hour I opened the jar, and found a considerable quantity of carbonate of lime in a thin pellicle on the surface of the lime-water.

III.—Thinking that, if I could take away the oxygen from arterial blood, I should convert it to venous, I took some arterial blood from a cat, and added to it a dilute solution of the proto-sulphate of iron. My anticipations were realized, for the blood immediately became black.

IV.—I took a small test tube containing arterial blood, and, having poured a little oil on the surface, to prevent access with atmospheric air in the tube, I tied it over with bladder, and set it aside. I found the colour to become gradually darker, until at the expiration of eight hours it was, to all appearance, venous.

V.—I took some arterial blood contained in a large test tube, and passed into the tube a small quantity of carbonic acid gas. The surface of the blood immediately became darker. Having removed the tube that conducted the gas, I placed my hand on the tube, and gently shook the blood: this was immediately followed

by a rapid change to almost black. I was puzzled to account for this change of colour, and the more so, because I had frequently seen the experiment recorded without an attempt to explain it, any more than the mere fact that a change of colour does take place. After a number of experiments, I found that all the acids without exception, from the mineral to the hydrocyanic, darken blood. If hydrocyanic acid darkens blood, and this fluid is weaker in its acidifying property than carbonic acid, which it is, I think we see the reason why carbonic acid darkens it without laying so much stress upon this gas in particular.

VI.—Having tied one end of the hollow arm of a barnacle, I put into it some venous blood deprived of the greater portion of its fibrine by stirring: I secured the other end with waxed thread, and placed it in a vessel of oxygen. Two hours afterwards the blood was florid, but I did not examine the air in the receiver.

VII.—I repeated the last experiment with the exception of substituting a portion of the lining membrane of the gullet of an ox, and likewise placed in the receiver an evaporating basin containing lime-water: the blood quickly became florid. I allowed the apparatus to remain quiet until the carbonic acid was absorbed. On removing the jar, I found a pellicle of carbonate of lime. The oxygen had penetrated the membrane by endosmosis, and had been replaced by exosmosis. This experiment I have frequently repeated with the same results.

Animal heat has at all times been a favourite subject of research among physiologists, and, as might have been expected, many have been the hypotheses and theories that have been broached on the subject. Tiedmann has taken great pains in recording the temperature of a great number of animals; and before I proceed to speak of the different theories of animal heat, I shall extract from his table the temperature of those animals which we are daily in the habit of meeting with. The temperature of

The ox is from...	99° to 104°	The common cock...	102.99° to 103.8°
The sheep is from	100.40 — 104	The common hen....	102.99 — 109.9
The horse is from	97 — 98.24	The pigeon.....	106.70 — 109.58
The cat is from...	98.60 — 103.60	The goose	106 — 111

It is known that gases passing to a liquid state, or liquid to a solid, extricate a large amount of caloric; hence, some years ago, it was thought that animal heat was dependent on nutrition, forgetting that, when the deposit of solid matter from the blood and absorption were equal, as is the case after the adult period, the one must counterbalance the other.

Dr. Crawford was, I believe, the first who explained the subject with any degree of precision, and established it by experiment. "He had shewn that in general, when inflammable bodies

combine with oxygen, a diminution of capacity takes place, whence there must be an evolution of caloric; and more particularly that in the combustion of carbon, when carbonic acid is forced from the combination of oxygen with the carbon, a large quantity of caloric is rendered sensible. It is evident that since, in respiration, a similar consumption of oxygen and production of carbonic acid takes place, there must be a similar evolution of caloric. He found by experiment, that the capacity of the blood changes when it passes from arterial to venous, and of course *vice versâ;* that of arterial being greater than venous in the proportion of 1.030 to .892. On these facts he founded his theory of animal heat. In respiration a quantity of oxygen is combined with carbon, and carbonic acid is found. Caloric must be evolved in consequence of this combination. But the blood is at the same time changed from venous to arterial, and by this change acquires a greater capacity for heat. It therefore takes up the caloric which has been extricated by the combination of oxygen with carbon, so that any rise of temperature in the lungs which would be incompatible with life is prevented. The arterial blood in its circulation becomes venous. In this conversion its capacity is diminished as much as it had been before increased in the lungs; the quantity, therefore, which had been absorbed is given out, and this slow and constant evolution of heat in the extreme vessels over the whole body is the source of its uniform temperature." So says Dr. Crawford.

We will now briefly review the theory of Lavoisier and Laplace. "The oxygen of the atmosphere combines in the lungs with the carbon of the blood, and is expired in the form of carbonic acid; and if more oxygen disappears than is accounted for by the carbonic acid expired, it is supposed that this portion of the oxygen which does not go to form carbonic acid unites with hydrogen in the blood to form water, which is exhaled.

Some physiologists, and, among others, Professor Von Walther and Dr. Paris, have thought to find a principal source of animal heat in the different secreting processes, by which fluids having a less capacity for caloric than the blood are separated from the latter fluid, and caloric, before latent, rendered sensible. According to Dr. Crawford, the capacity of milk for caloric is less than that of blood. Dr. Paris estimates the capacity of urine for caloric at 0.777, that of arterial blood being 1.003. Some physiologists, among whom stands the name of Sir B. G. Brodie, say, "it must be allowed that the changes induced upon the blood during respiration are preparatory to the evolution of animal heat; and, although we contend that this heat is immediately the result of a manifestation of the vital influence of the ganglial system of nerves, exerted upon the blood contained in the vessels to which these nerves are

distributed, yet it must be admitted that the respiratory processes are necessary to its production, inasmuch as they effect on the blood a change of properties which are requisite to excite this system; and as this fluid, when thus changed, contains the materials necessary to, or is otherwise in a suitable condition for the manifestation of the influence which that part of this system of nerves that is distributed to the bloodvessels exerts."

It has been a very generally received opinion that carbon unites with oxygen in the lungs, but we have never heard a satisfactory explanation of the state in which it exists prior to its combination. Some say, as carburet of hydrogen, which, by uniting with three equivalents of oxygen in the lungs, form one equivalent of water acid and one of carbonic acid. How the advocates of this theory account for the exhalation of carbonic acid and absorption of oxygen being equal, I am at a loss to know. In the present state of our knowledge, chemistry will not tell us. If it existed as carburetted hydrogen, the formation of an equivalent of carbonic acid and aqueous vapour would extricate so much heat as to destroy life; and did it exist as "carbon," I am ignorant of the means by which it could unite with oxygen at the temperature of the body.

Many chemists and physiologists have obtained results widely different from those of Von Walther and Dr. Paris, so that this theory, with that of Sir B. Brodie's, is regarded as untenable and unsatisfactory.

The question is then, Does the oxygen unite with carbon in the lungs? I say it does not; it unites with the carbon in a nascent state, as the blood becomes venalized, and is exhaled by the lungs. The imbibing or endosmotic power of the membrane composing the air-cells has been spoken of above. The blood readily absorbs oxygen, as is shewn by the experiments before related, imbibing it readily, and giving it out afterwards as carbonic acid. We may compare the air-cells to our large bladder with a thin stratum of venous blood spread over it. By filling the bladder with atmospheric air we immediately establish endosmosis; the oxygen is absorbed and replaced by carbonic acid. The blood carries the oxygen it had absorbed to the different parts of the frame; and as the several secretions are separated, so the blood becomes poorer. It is charged with carbonic acid, and unfit for nourishing the system. During this gradual formation of carbonic acid there is a steady elevation of animal heat.

For the theories of Lavoisier, Crawford, Brodie, &c., I am indebted to the works of Murray and Richerand.

The Secretary agreed with Mr. Hughes in considering the subject introduced by him to be replete with interest, and he hoped,

in common with him, that it would lead to a useful discussion. This, however, had been in a great measure precluded by the nature of Mr. Hughes's thesis, which embraced almost all that was now generally accepted, although much that has been advanced to account for the phenomena presented is based on hypothesis. We are, however, indebted to his love of science and observation for the amount of air inspired by the horse, as well as the quantity of carbonic acid it contains; calculations which Mr. M. believed had not been before recorded.

In the general statements laid down by Mr. Hughes he concurred. On all hands it appears to be allowed that arterial blood contains a larger amount of oxygen than venous, which may be abstracted from it; and venous blood a large amount of carbonic acid, which, in like manner, may be withdrawn. The conversion of oxygen into carbonic acid he believed, with him, to take place in the capillaries of the body; by which process arterial blood is changed into venous, and at the same time heat is evolved, arising from the capacity of oxygen for heat being greater than that of carbonic acid: the agents bringing about this change are certainly the nerves, the nervous system being the most efficient in the animal economy.

A few particulars respecting the blood, however, Mr. Hughes had left unnoticed, probably with a view that they might be elicited during discussion. He has not told us where the blood globule is first seen, nor its form. Doubtless he is aware that in the chyle it is not recognized until after the newly formed blood has passed through the mesenteric glands. Its form in the horse is that of a flattened and indented spheroid. Its colour is dependent upon a peculiar animal principle, called hematozine. Iron, of late, has been thought by Berzelius to exist in this principle in its elementary state, and not as an oxide. The redness of the investiture of the particle is consequently caused by the action either of the air or the salts of the blood upon this proximate substance, which naturally is of a blackish colour. The facts adduced in favour of this view are, in general, that metallic colours are not easily destroyed, and, should they be so by an alkali, they can be restored by an acid. Such is not the case with the colouring matter of the blood, which is easily changed by certain agents.

Arterial blood has been found to coagulate sooner than venous, which is probably dependent upon its containing more fibrine, it being the property of this substance to undergo spontaneous coagulation. This circumstance enables us to account for many phenomena which present themselves in certain conditions of the

blood, a fluid on which it may be said the very life of the animal depends; while it is essentially necessary that its condition should be normal, or disease will be sure to be engendered in the system.

A discussion now took place, not so useful as it might have been. Instead of a fair and candid inquiry into various points, there seemed, undesignedly of course—because such a feeling should never be exhibited in a scientific discussion—an attempt to confound the author of the Essay, rather than elicit the truth.

Mr. Hubbick.—How is the colouring of the globule effected by metallic iron?

Mr. Hughes.—I am of opinion that it is in the state of a peroxide in union with the proximate principle, designated *hæmatozine*. He knew not how it is formed in the first instance, this being very difficult to ascertain.

Mr. Mackinder.—How is it that animal heat is the same in all parts of the body, if the elimination of heat takes place in the lungs only?

Mr. Hughes did not consider this to be the case. The change is taking place in all parts, chiefly by means of the capillaries, which are everywhere found, and which make up the substance of every part. They do not essentially differ from each other, although somewhat more activity resides in some than in others. In fact, the change takes place in every part of the body, because the capillaries are everywhere found. In answer to other questions, he referred to an experiment of John Hunter, who, on tying the femoral artery of a dog, found the blood to become black. It changes from arterial to venous when the circulation is stopped. The nerves were said to have a great deal to do with the development of heat; but they were not the chief agents—this was not their principal office. The blood, however, certainly does not undergo the same changes after the nerves are divided. Sir Benjamin Brodie's experiment on this point he considered altogether erroneous.

Now commenced a series of categories, calculated more to puzzle than enlighten. The following were some of the queries. The answers were explicit and correct.

How did the defender of the Essay account for the generation of animal heat? Whence does the carbon come that combines with the oxygen? How does he account for the change which takes place? Whence the muriate of soda that is so prevalent in the secretions? How does he account for the other neutral salts with which the blood abounds?

At length the Secretary interfered. "Many of those who were present," he said, "were listening to this categorical mode of proceeding with a certain degree of unpleasant feeling. The essayist was answering the questions put to him with a great deal of good feeling and good sense; but he could not think that it was in accordance with the intention of the founders of the Association that discussions should be carried on in this manner. Inquiries certainly may be instituted; but it would be far better if members would,

at once, express their opinions. Thus would an argument be awakened which could not fail to profit. Thus the relation which exists between the oxygen of the air and the blood is an interesting inquiry; and whether the blood has the power of separating this from the other constituents of the atmosphere. Such experiments are very useful, and it is surprising to see the rapidity with which certain gases penetrate the membrane forming the air-cells and other tunics.

Mr. Ernes saw the experiment performed of exposing venous blood in a bladder to the action of oxygen, and was surprised at the rapidity with which its dark colour gave way to a bright and scarlet one.

Mr. Hubbick.—Is not carbonic acid a necessary constituent of the atmosphere? It is generally considered to be the support of vegetable life.

Mr. Hughes.—It is. It is exhaled during the night, and inhaled during the day. It is this reciprocal change which maintains the balance between the two grand kingdoms of nature, for animals exhale carbonic acid, and plants inhale and decompose it, liberating its oxygen.

Mr. Greaves.—What is the quality of the first-drawn blood?

Mr. Hughes.—It is nothing more than aqueous vapour; it is of greater temperature than the surrounding air, and bears with it a certain aroma. As it respects the amount of oxygen absorbed, the temperature of the atmosphere has a great deal to do with this. According to Prout, it varies to an unexpected extent, and especially after a course of mercury.

Mr. Ernes.—According to some experiments instituted at Alfort, the quantity of oxygen absorbed was greatest in the morning, and least at night.

Mr. Hughes.—Dr. Prout also found that the quantity was greatest in the morning.

Mr. Twinberrow.—Is the animal heat only eliminated when the arterial blood has become venous, and not when the venous blood is becoming arterial? Is not the arterial blood the chief agent?

Mr. Hughes.—It is the carbon rapidly uniting with the oxygen of the air to form carbonic acid, which has not so great a capacity for heat as oxygen has, while it is the specific property of membranes to be permeated by the lighter of two gases that may be acting upon them.

Mr. Ernes.—The lungs are the principal agents in separating oxygen from the air. A sort of modification of this papulum is going forward in the lungs, in order to prepare it for the full discharge of its useful purposes. The lungs act on the blood as a kind of stomach. It undergoes a kind of digestion in them.

Mr. Hughes.—You cannot alter the oxygen, whatever you may do with the blood. The means of the change in the composition and character of the blood are the great extent of surface over which the ramifications of the vessels spread. The change of the blood, however, is purely chemical. The function of nutrition, the generation of animal heat, and also the act of respiration, although all dependent on chemical agency, are much more closely connected with organic life.

Mr. Hubbick.—The change of the blood under inflammation, how would Mr. Hughes account for this, and for the heat which is developed?

Mr. Hughes.—The blood flows in greater quantities, and there is a deposition of lymph by which heat may be eliminated. If there is general or constitutional disease, the blood travels more quickly through the capillaries. There is necessarily more blood thrown on the part. The blood travels in the capillaries at the same rate that it does in the larger vessels, after the power of the heart has ceased. The increased heat, consequently, arises from the increased quantity of blood that is sent to the part.

Mr. Hubbick.—There is a great deal of difficulty and mystery about all this. None of the various kinds of secretion can be carried on if the nervous influence is suspended. How is this singular porosity of the membrane to be accounted for? One would think that the lighter of the two fluids would pass through first. May not much be attributed to capillary attraction? We are told a great deal about affinity. It is a term which seems easily to account for a great many things, but is oftener a cloak for ignorance than an explication of important principles. There is, however, a great deal in this principle of capillary attraction. It goes farther, in his mind, than any other principle to account for many of the phenomena that are taking place; yet there is a difficulty even here. He could not assent to the new theory, that the percolation of fluids is governed by the different degrees of viscidity which they possess. The experiments with sago, gluten, &c. have no weight in his mind.

Mr. Greaves.—The gradual emaciation under which animals sometimes labour is to be accounted for, probably, in the same way.

The time for closing this debate had now arrived, when *Mr. Youatt* begged to express the pleasure which he had that evening experienced. He would not say, that in so intricate and abstruse a subject—too intricate and abstruse, perhaps, for the young student—every point was or could be as clear as day; nor that every reply to every question was perfectly correct; but a frank and honest answer was given to each, and generally the right one. With this readiness to meet his opponents on every point was conjoined a good nature and a want of presumption that were highly creditable.

He felt for him when, in a moment of inconsideration, a gentleman, his senior, and by profession devoted to these studies, was bearing hard upon him. He acknowledged that he should not have kept his temper so well. His conduct reflected on him the highest credit; and in future he did hope, that a consciousness of the importance of the subjects here discussed, and the value of union and good fellow-feeling in order to derive all the advantages which these meetings can bestow, will produce among all a conduct and demeanor worthy of the profession to which they are devoted.

FEBRUARY 11.

The President in the chair.

Certificates of Membership were awarded to Messrs. Lillyman and Walters.

Messrs. E. S. Grey, R. Mackinder, G. Cooke, and J. T. Twinberrow, were elected Vice-Presidents of the Association.

The following account of a singular fœtus that had been transmitted to the Association by Mr. Dawber was read.

My dear Sir,—I am sorry to say that sickness has prevented me from complying with your request in detail. Allow me to add, that, as it regards the giving of a full description of the state of the soft parts, I shall not be able to do so correctly, as they were somewhat mutilated during the act of parturition. I will mention a few facts, and then leave the further description in better hands. The calf, it appeared, was living at the time the owner commenced to assist the cow in the expulsion of it. The heart was very large, and much flattened. It received no covering in the form of pericardial sac, but was solely suspended from the spine by its bloodvessels. The lungs were compressed, never having been inflated with air. The ribs were covered with pleura, which terminated abruptly at the cartilages with the common integuments. The skin lay in folds on the spine; the diaphragm was totally wanting; the liver, which was of the usual size and texture was, of course, only attached to the spine; there was only one kidney; the intestines were suspended from the spine, and put on no change, with the exception of the rectum terminating in a cul-de-sac in the obturator foramen; the spine was fractured in the loins during parturition, and in the neck in order that I might dissect the parts. I have written this in great haste, and beg you will excuse its inefficiency and all faults.

I remain, dear Sir,

Your's, as ever,

JAMES DAWBER.

To the Secretary, &c.
Feb. 10, 1840.

To this followed another and still more interesting communication from the same gentleman :—

To the Veterinary Medical Association.

Gentlemen,—The only reason which prompts me to send you the particulars of the following cases of retention of urine and rupture of the bladder, arises from a full conviction in my mind, that the former is a malady of far more frequent occurrence in the horse than has hitherto been described by writers on veterinary pathology. My conviction, you will find from the sequel, has been derived solely from what has fallen under my own immediate notice, and it has been confirmed on seeing that the symptoms bear so close a resemblance to those of enteritis or spasmodic colic. Under such circumstances I can draw no other inference than the following :—

That the sufferings of many poor animals are not only protracted but augmented, and many cases eventually lost, from the misapplied remedies of empirics, when, in the hands of the experienced veterinarian, immediate relief might be afforded, simply from his being able to detect, with the slightest glance, any particularity of symptoms, and at once determine on the real nature of the malady he has to contend with. As our patients are unable to impart to us any information respecting the seat of their ailments—and this is the great disadvantage veterinarians labour under—it becomes highly requisite that we should, in all cases, mark well the symptoms, as it is from a knowledge of them, and of the circumstances which happen at the commencement or during the progress of disease, that we are enabled to become acquainted with the part of the body in which the disease is situated.

I shall be excused, I am sure, for making use of such strong language respecting empiricism, when the particulars of the following cases have been read to you.

I do not expect, gentlemen, that the following cases will be at all interesting to the senior members of the Association ; yet I flatter myself they may be of some little use to those gentlemen who are about to enter on the intricate path of *practice :* they may stimulate them to watch the variety of symptoms in similar

as well as in all other cases now, whilst they are in possession of so good an opportunity; and thus render themselves able to decide with facility on the seat and nature of disease with credit to themselves and satisfaction to their employers.

Case I.—During my noviciate, in the summer of 1834, I was requested to attend a post horse, the property of a person in Garstang, said to be labouring under spasmodic colic. I found the poor animal struggling with death, his countenance and trembling frame betraying the most acute suffering, He was covered with a most profuse perspiration, breathing laboriously, standing with all his legs apart, with a pulse imperceptible at the artery; yet the heart beating most forcibly: in short, all the symptoms of approaching dissolution, which are much better imagined than described, presented themselves to my view, and too clearly told me that the time for giving any relief was gone by.

The post-boy had endeavoured to draw a little blood before I arrived, but in vain; for the vital fluid was fast ceasing to flow. He informed me, in the first instance, that the horse had voided no urine during the day, and exclaimed, "If you can only give some medicine that will force his water, he will recover." This information prompted me to examine the state of the bladder per rectum. It was empty; but before I had completed my examination the animal fell to rise no more.

Not being able to satisfy myself as to the cause of death in the short space of fifteen minutes from the time the post-boy had dismounted, I began to question the boy, and elicited the following particulars:—

The horse was one of a pair that had conveyed a gentleman's carriage the distance of twenty miles, the day being excessively hot, without his ever being freed from harness; after the completion of which he refused all food, and appeared exceedingly restless, being very desirous of lying down, during which he evinced great pain. The assistance of an empiric was called for, who without inquiring at all into the circumstances of the case, declared he had the gripes, and gave him a dose of gin, which not having the desired effect, but otherwise, the boy thought it best to get him home if possible; consequently the poor animal was compelled

to retrace his wearied steps, notwithstanding his intense pain. But ere he had gained six miles nature could do no more: he was with difficulty conveyed to the place where I had first seen him, and where, as I have before stated, he died in the course of fifteen minutes. Finding the bladder empty, and hearing the boy declare that the horse had not voided any urine during the day, I could come to no other conclusion than that the bladder had become distended beyond its power of resistance, and a rupture of its coats was the consequence, which, with the excessive exhaustion, I concluded was the cause of death. In order that I might be satisfied on this point, I proceeded to make a post-mortem examination. I found the bladder ruptured at its apex, and the lungs slightly congested, but no trace of inflammation or disease in any other organ.

I shall refrain, gentlemen, from making any observations on the good or bad treatment of the person who prescribed the gin, as it will be obvious to all what the effect of a stimulant and a diuretic would be on a viscus already inflamed and distended beyond its natural limits; or what relief might have been given had the man been able to derive from the symptoms a knowledge of the seat of the disease.

Case II.—In the month of April, in the year 1838, I was sent for to attend a chestnut hack, the property of Mr. W. Rainford, of Wigan, with a further request that I would bring along with me such medicine as would cure the gripes. I found my patient lying stretched out on his right side, groaning, and evincing great pain; breathing laboriously, and perspiring most profusely. I made him get on his legs, which seemed greatly to increase his pain; the breathing became more quickened, and the countenance more anxious. His pulse was ranging betwixt 70 and 80, and full; he trembled much, and seemed wishful to again lie down. He first raised one hind leg then the other, as if he was labouring from the pain of a powerful blister applied to them.

The symptoms of the former case had made an impression on my mind never to be forgotten: the universal tremor, the very anxious countenance, the strange action of the hind limbs, and the profuse perspiration, pointed out to me too plainly the seat of the

poor animal's pain. I endeavoured to elicit any information I could respecting the commencement of the case; but learned nothing more than that the horse had been out in harness during the whole of the day, in the hands of a stranger, and that he fell down as if dead before he could be liberated from harness. It was with difficulty he was made to rise, and he fell again in like manner when he got in the stable, where he had lain, evincing the greatest pain, until my arrival.

I found my employer and the bystanders of opinion that he was suffering from gripes; consequently, I thought it better to examine the state of the bladder per rectum, before giving an opinion.

I found the bladder distended to its utmost limits: the neck felt like a hard rope through the coats of the rectum. I then stated to my employer, that the bladder was the seat of disease, the neck being paralyzed, and suppression of urine the consequence: of this he seemed somewhat sceptical. To convince him, therefore, I said I would press gently on the bladder, and immediately the poor animal uttered a dreadful groan, and evinced the most excruciating pain. The owner then exclaimed, "I see you are right: pray do something to relieve him as soon as possible."

I at this moment felt the want of a catheter (which I then did not possess). In consequence of not having one, I was forced to have recourse to other means, which I am glad to say were effectual.

As bleeding is the best antiphlogistic as well as antispasmodic remedy we possess, I first had recourse to it, and withdrew about twelve pounds of blood (he was a little horse), after which I threw into the rectum warm injections, and applied hot fomentations along the course of the perineum. After pursuing this plan a little while, I proceeded to apply a slight pressure with my hand on the body of the bladder, gradually increasing it: this gave him excessive pain, notwithstanding which I continued my operation, when, to my great satisfaction, an involuntary and most forcible discharge of bloody urine took place. In consequence of the great pain of my patient, I left him to prepare some medicine, giving orders for the body to be warmly clothed, and the legs hand-rubbed and bandaged, as they were very cold. This was about eight o'clock, P.M.

9 P.M.—My patient still continues to evince great pain; but the pulse is not so quick, or the breathing so laborious. I gave him an aqueous mixture of two drachms of opium with eight ounces of linseed oil; shortly after which I repeated the pressure as before, and when a very considerable quantity of bloody urine was involuntarily voided. From this time he gradually became easier until eleven o'clock, when I again visited him, and found him comfortable and easy; pulse 52, and soft, and I was told he had eaten a little bran mash.

I now left him until the following morning, when on visiting him I found him not so well as I had anticipated. The pulse and breathing were quickened; he had lain down during the greater portion of the night, in which posture he from the first seemed to be the easiest. When on his legs, he frequently endeavoured to void his urine; he had evacuated no dung from the time he came into the stable, and the rectum contained hardened fæces; but the bladder was empty.

It was evident now that I had cystitis to contend with, and my first step was to relax the bowels, and give sedatives and demulcents. I administered sol. aloes ℥v, pulv. opii ʒi, ol. lini ℥viij, and at intervals gave him mucilage of gum, starch gruel, and linseed tea. I also caused an enema to be given every three hours, until the bowels were freely opened.

At 2 o'clock on the same day I found him better; more disposed to stand, but yet voiding small quantities of high-coloured urine. The bowels were still confined. Continue the mucilaginous drenches, and the enemas.

At 6 o'clock, P.M. I found my patient considerably improved: he had only voided urine once since I last saw him, and it was of a natural colour; his pulse was 50, and weak; the respirations tranquil; but no fæces had been yet evacuated. I ordered the preceding treatment to be continued, and gave sol. aloes ℥v, and ol. lini ℥v. My object for giving this mixture was, that I might have none of the resinous matter in the aloes, or any thing of a diuretic nature in the oil.

Next morning I found my patient almost convalescent. He voids his urine without pain, and less frequently; the medicine operating pretty well, and he was regaining his spirits.

On the following day I ascertained by my patient, as well as my employer, that I was no longer wanted; consequently I discharged him, and the owner discharged me.

The particulars of a third case, which I was called to (but was not at home), and which terminated fatally, I have in store; but shall at present withhold them.

In sending you these cases, I hope to contribute my mite towards promoting the grand object of the Veterinary Medical Association; namely, the advancement of veterinary science, and the improvement of our art; trusting that the senior members will not deem the reading of these remarks a loss of their valuable time, but that others may be stimulated, and contribute in like manner, and that the younger members may be benefitted; in fine, that society in general may have reason to thank the Association for its successful endeavours to promote the general good, while an alleviation of the sufferings of animals will be ensured by the treatment of their maladies being in strict accordance with the true and established principles of medicine.

I am, dear Sir, &c.

JAMES DAWBER.

The Secretary, although knowing little, compared with those around him, of the diseases of the horse, had read these communications with very great pleasure. He felt much respect for so zealous a practitioner: many feelings of gratitude were mingled with his, and he was assured he was speaking the sentiments of every one who heard him.

Mr. Dycer.—They are very interesting cases; and he was inclined to believe that they were of more frequent occurrence than was imagined. Almost every case of enteritis and spasmodic colic is accompanied by more or less strangury, and this from sympathy with the nervous system. This is parti-

larly the case with the bladder. Rupture of the bladder was the principal cause of the excessive pain. In mares we do not find this great degree of pain; and they who have seen cases of colic and enteritis will have observed more or less strangury. He had witnessed a case of abortion during a fit of colic.

The President.—The author of the paper says that there were no lesions of the intestinal tube. If these cases had been preceded by inflammation or spasm, there would have been traces of these affections. He had seen many cases of spasmodic colic, and yet no visible affection of the urinary organs, either before or after death. He never saw a case of rupture of the bladder. He apprehended that these are very rare cases. Professor Coleman used to say that he never saw but one case of the kind, and then the horse died of spasm of the intestines without inflammation.

Mr. Hubbick had seen many cases of inflammation of the bladder. They were generally not very difficult to detect. The horse lies stiller than in spasm. He lies more on his back. One of the peculiar symptoms of this disease, and a very important one, is the lying on the back. The pulse is quickened; which is not always the case in spasm. He never saw a case of rupture of the bladder, but has often found it very much distended.

Mr. Dunn had seen several cases of diseased bladder; but the supposed characteristic symptom, the lying on the back, was not present.

Mr. Hubbick.—The horse is always more easy when lying on his back.

Mr. Nash had seen many cases of retention of urine in mares and cows, and one case of ruptured bladder in a cow; but he had never seen them lying on their backs. He never saw a cow die of this retention; but he observed that, when ill, their legs were widely parted.

Mr. Dycer.—With reference to these cases, they are merely symptomatic of the disease; for there is always acceleration of the pulse at first, yet not to any great degree: but this acceleration of pulse comes on plainly enough afterwards. On examination after death, the whole of the large intestines are generally found distended, but only a very slight appearance of inflammation. A groom will say, that, when a horse is commencing to stale, he is getting better. When the other spasmodic action is subsiding, much of the spasm of the bladder is relieved.

The President.—With regard to the first case related by Mr. Dawber, it was very plain what must have been the cause of the distention and rupture of the bladder. This horse was at work during the whole of the day. The urinary secretion proceeded in common with that of the other fluids, and thus the bladder became distended beyond the power of collapsing. The stomach also became distended, and the heart lost all power of contraction. The same thing happens occasionally to ourselves, and is attended with excessive pain. In case there is no morbid appearance of the intestines, he does not regard this state of the bladder as necessarily preceded by any attack of the intestines, but, at the same time, he admits of a great degree of sympathy between the organs.

Mr. Daws had occasionally observed that, when there was any lesion of the spinal cord, there had been a distended bladder, and to such an extent that the horse was unable to void his urine without assistance. A case of distention of the bladder is recorded by him in the THE VETERINARIAN; but that horse eventually got well. Great pressure of the hands was used on the region of the bladder, and the catheter was had persevering recourse to. He had never seen a case of ruptured bladder; but he had had a mare with partial inversion of it. He introduced his hand into the vagina, whence there had been violent and constant efforts to expel something. He soon recognized a portion of the bladder, partly swollen and partly empty, which, having his hands well oiled, he returned with little difficulty.

The President.—Has any gentleman met with cases of ruptured bladder in the sheep?

Mr. Mackinder.—Very frequently, from the whole length of the urethra being mechanically stopped, and from injuries occurring in various ways. The inflammation is very considerable, and extends down the thighs. The sheep goes moping about, lifting his hind legs, striking the body, and very frequently looking round.

The President had seen several cases somewhat analogous to it. In old wethers there is, at the end of the penis, a vermiform appendix, on account of which they often take a considerable time in voiding their urine. The mucous membrane becomes inflamed; a great deal of mucus clings about it; and the prepuce is sometimes fairly knotted up. It is somewhat analogous to the clap in the human being. The bladder at length gives way, and there is frequently a considerable accumulation of fluid in the abdomen. He had taken several quarts from the body of a sheep, which must have occupied a considerable time in collecting, and yet there was little inflammation of the peritoneal lining. These cases of disease in sheep are very common. Some have the hardihood to attempt the treatment of them. A bougie is occasionally inserted when any mischief is suspected; and the same instrument is used to disqualify rams from having connexion with the valuable ewes. He would warn those whom he was addressing against considering these cases as spasmodic. There is rarely or never any spasmodic action at all

Mr. Wills.—Some horses will not stale except a small portion of litter is put beneath them. This is a frequent cause of accumulation of urine.

The President.—Both of the cases sent by Mr. Dawber are important ones. They teach us caution in our examinations, and caution before we give a decided opinion. Affections of many of the organs of the abdominal cavity are often very occult, and we frequently know neither the situation of the disease, nor the organ attacked; therefore the necessity of due consideration in the first steps we take.

A case of fracture of the larger pastern bone, communicated by Mr. Woodger, of Paddington, came next under consideration. The bone was taken from one of the leaders of the Brighton coach. The accident occurred at Horley. The lameness was immediately perceived, and the horse led to a stable, where he remained fourteen days, and during which period no professional man was called in, and little was done for him. At last, however, the owner wished to have him examined before he decided on his death. The horse crept along the road four-and-twenty miles, without any great exhibition of pain. Mr. Woodger decided that there was a fracture of the pastern, and advised that he should be immediately destroyed. It was done, and the joint was examined. There was a great quantity of blood and synovia, and the divided edges of the bone overlapped each other. There are two extraordinary circumstances connected with this accident,—that the horse could go twenty-four miles without evincing much pain, and that, on examination of the bones, the surfaces of the fracture should be found to have undergone a kind of polish. Whether from the journey of twenty-four miles, or the daily gentle friction between the bones as the horse stood in the stable, all the asperities of the divided surfaces were worn away, and what might be fairly called a polished surface was presented by both, and which could scarcely be rendered more perfect by the skill of the artist.

FEBRUARY 18, 1840.

Mr. Evison related the following case, which occurred in a cart mare, the property of Mr. Sooby, a farmer near Louth, during the time he was with Mr. Darby. In the morning, about nine o'clock, a messenger arrived, stating that one of the cart mares was attacked with colic. He was accordingly sent, and provided himself with an antispasmodic draught, &c. When he arrived he found the mare apparently labouring under every symptom of spasmodic colic. The pulse was a little accelerated, denoting approaching inflammation; he therefore thought it prudent to abstract blood, which he did to the amount of about three quarts. He then gave her a draught composed of tinct. opii, nitric ether, and a pint of linseed oil. After administering this, she seemed to be worse, frequently lying down, but no sooner down than up again; and during one of the paroxysms a portion of the rectum protruded.

Having introduced his hand up the rectum, he found a great accumulation of fæces, which were very hard: he removed a considerable portion of them with his hand, and then injected a clyster of salt and water, and, after a short time, returned the portion of protruded rectum.

The mare appeared now to be much relieved, and he left her; ordering another clyster to be given if she seemed to have any difficulty in evacuating her fæces.

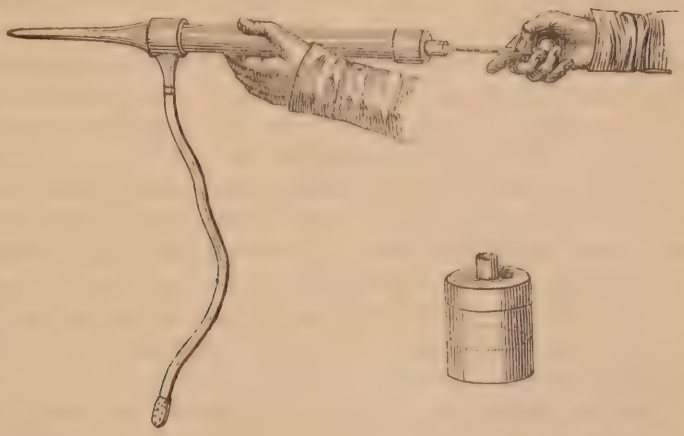
About three hours after he got home a messenger came to say that the mare was a great deal worse. Mr. Darby being at home, he immediately went; but when he arrived the mare was dead. On his return home he informed Mr. Evison that the bladder was ruptured, and a great quantity of urine had escaped into the abdominal cavity. He, Mr. E., was sorry to say he could not give any account of the appearance of the intestines and other parts after death, which is certainly most important.

Now a question arises,—Was the death of this mare caused by the rupture of the bladder, or might not intussusception or inflammation have taken place? He was inclined to the latter opinion, for rupture of the bladder would not cause death so quickly. He believed that a horse might live a long time with a ruptured bladder. It had been observed by Mr. Hubbick that he had seen cases of ruptured bladder, during which the animal would frequently lie on his back for a considerable time; but in this case the mare was no sooner down than up again.

Mr. Hubbick explained that it was in cases of cystitis that he had observed the symptom adverted to by Mr. Evison, not in ruptured bladder.

Mr. Daws presented an improvement on the Enema Syringe. It was an altered form of that manufactured by Mr. Read, and so contrived that, if the necessity of the case required it, the practitioner might be able to administer an enema without assistance—a circumstance of considerable importance to the country practitioner, where help could not always be readily obtained.

The annexed woodcut contains an engraving of it. Its construction is very simple, and its action completely the reverse of the instrument invented by Read.



The syringe being held in the hands of the operator, as represented in the engraving, and the piston pulled out as far as may be necessary, a conical valve at the termination of the short tube, whence the leathern pipe commences that communicates with the fluid, rises, and the fluid fills the barrel of the syringe by means of an elastic tube with a perforated bulb at the end, which should be placed in a pail or any other convenient vessel.

When the piston is pushed inwards, a spiral spring valve at the end of it opens, and the contents are discharged into the rectum.

The Secretary said that the instrument spoke for itself. It was an ingenious application of the principle of Read's pump, and might occasionally be found exceedingly useful, when assistance was not at hand. Even tobacco enemata might be given by it.

Mr. Daws had not yet tried this; he could, however, see that, by a very simple contrivance, this could be accomplished. A box with perforated holes at the bottom might with ease be screwed on at the same place below the conical valve, instead of the elastic tube.

The following Essay was then read:—

ON INFLAMMATION OF THE VEINS, AND PRINCIPALLY OF THE JUGULARS.

By Mr. W. A. CARTWRIGHT.

I know of no disease more worthy of your consideration than that which I have chosen for this night's discussion.

I am aware that the subject was brought before the Association in the session of 1837-8, by Mr. Gibson, of Manchester, and many valuable observations were made by him and others during the discussion; but as the debate turned principally on one division of his subject, the mode of venesection, I do not think that the question of *Phlebitis* was fully and fairly considered.

Although I may not offer any thing particularly novel to your notice, yet I believe there are those among us who may be able to throw considerable light on the subject from the different cases which they must have witnessed; and I can assure you, from my own experience, that there is no disease—as our invaluable friend Mr. Turner says—that requires more tact, talent, and discrimination, in order to perform a cure. To Mr. Percivall we are under great obligation for his excellent observations on this, as well as on many other topics, and to his labours I acknowledge myself much indebted for some valuable hints on this subject.

PHLEBITIS, or inflammation of the veins, may be observed occasionally, I have no doubt, in every animal; but as far as my experience goes, I have only seen it in the human subject, the horse, and the cow. The butchers, however, inform me that they have had many severe cases in calves, by so repeatedly bleeding them, prior to the last and most merciful use of the knife. In the cow I have only seen two cases, one of which was fatal, and a report of which may be found in THE VETERINARIAN for November last. The other cow was saved.

Mr. Youatt, in his work on Cattle, says that "he has seen as bad necks in cattle after bleeding as in the horse, but they are not so common."

In the horse the diseased vein has been chiefly the jugular. I never had more than three or four cases in the superficial brachial, and none in the superficial tibial—*vena saphena major*—or other veins.

The jugular veins are the vessels chiefly employed in returning the blood from the head, brain, face, neck, &c. and are made up of large branches, that take their rise from various places, and from what are usually designated the *submaxillary, auricular, internal*

maxillary, *parotideal*, and *temporal* veins, and also from a branch that comes from the lateral sinus of the *dura mater*, and proceeds through the *foramen lacerum basis cranii*. Other smaller branches from the neck, &c. empty themselves as they proceed down the neck.

These form what are usually called *the jugular veins*, and which empty themselves into the anterior vena cava.

They are not half the size in the horse that they are in the cow, as is sufficiently evident while they are grazing, or when a ligature has been applied to the neck for the purpose of bleeding.

Mr. Youatt, in his work on Cattle, has described an internal jugular vein, and says, "it is deeply seated, and lies by the side of the carotid artery and under the subscapulo-hyoideus muscle; and that a knowledge of this additional jugular vein in cattle will obviate in a great measure the danger accruing from obstruction in the external jugulars." I examined a cow a short time ago, but could not discover it, but am told by others that it exists. I therefore leave that question for anatomists to decide upon, knowing at the same time that it is a disputed point among students, yet easily settled by the examination of a few subjects.

Professor Quain and others have described the veins in the human subject as having three coats, the external one of condensed cellular tissue, the central one thinner and more pliant than that of the arteries, and composed of fibres, the greater part of which are longitudinal, and a few transverse. The internal coat consists of a thin shining membrane, and is continuous with that of that lining the auricle of the heart. Veterinary authors describe only two coats, a muscular and a membranous one—the elastic coat of the artery being absent.

On dissecting the jugular vein from the neck, we find it surrounded by a considerable quantity of loose cellular membrane, which becomes more condensed as we approach the inner membrane. After removing this we can easily discover the texture of the vein to be composed of a vast number of minute threads or fibres as delicate as the finest silk or the spider's web, and, as in the human being, most of them being disposed longitudinally, and the rest transversely. The inner membrane on being cut across, can easily be stripped off, and has the appearance, as in the human subject, of a thin, shining, villous tunic.

The jugular vein is of immense strength. We are unable to break it by the united force of both hands, and, on separating longitudinally the delicate fibres of which this canal is composed, we find each to be of great strength compared with its bulk.

Within the jugular vein are reflexions or duplications of its lining membrane, called valves, but which Mr. Hunter says are

of a tendinous and elastic nature, and of a different structure to the internal coat. I am inclined, however, to think that they are nothing more than fine duplicatures of the membrane, for I fancy that I have been enabled to separate them into two folds.

In the human subject, I believe that there are two of these folds uniting to form one valve. Mr. Percivall says that in the horse there is *commonly* but one, sometimes two, at other times three. According to my own experience there are generally two folds, sometimes three, and rarely but one.

Some time ago, I dissected from a horse's neck the right or off-side vein, from the breast to the bifurcation above. I found that there were three valves at the lower part of it, at intervals nearly three inches from each other, and that there was a space of nearly a foot below the bifurcation without a valve. In another there were six valves in a space of twelve inches.

A few days ago I dissected both the veins from the neck of a horse from the breast upwards. In one of them I found five valves. The four lowermost were tricuspid, and at intervals of from two to four inches from each other. They were small, and projected but little from the sides of the veins. I should have thought that they were incapable of preventing the regurgitation of the blood. The uppermost, which was five inches below the bifurcation, was tricuspid, and very large. In the branch that comes from under the parotid gland there was a bicuspid one about five inches above the bifurcation.

In the vein on the other side there were six valves in the same space. Three at the lower part of the vein were very imperfect, and from an inch to an inch and a half apart: the two next were well developed, and at a little greater distance from each other; while the upper one was large, three inches from the vein below, and five inches from the bifurcation above. There was another in the submaxillary branch, an inch and a half from the bifurcation.

In an old grey horse that was destroyed at the College, there were only two valves, but each large and distinct. One was near the breast, and was bifid. The other lay about four inches above, and was trifid. There was a single one in a branch just above its bifurcation. In a section of eight inches made by Mr. Percivall from the middle of a jugular vein, he found two pairs of valves two inches from each other in the upper part, and three single ones, and a tricuspid one in the lower part, whose edges were accurately adapted to each other: thus there were no fewer than three different kinds of valves in the space of eight inches of vessel.

I dissected the jugular veins from a cow. At the lower end of each there were three valves at intervals of two inches, and only one more between them and the bifurcation.

There are twelve or fourteen valves in the superficial brachial vein from the knee to the jugular, and about the same number in the *superficial femoral* from the hock to its termination.

At the places where smaller branches open into the jugulars there are loose flaps of the lining membrane floating, and which will direct a portion of the blood to flow up the small branches again.

On the jugular veins of horses there are often seen varicose enlargements of various sizes, and sometimes as large as walnuts. These are generally considered as arising from bleeding. On examining these varices, they are found to be nothing more than a thin transparent membrane, and not more than a quarter of the thickness of the natural vein. The incised edges of the veins probably threw out fresh organized matter, the blood pressing against it at the same time, and pushing it against the skin, but, ultimately, often uniting together in a state of dilatation, and this afterwards becoming more dilated and thinned in consequence of the blood forcing against the parts and reducing the coats by continual pressure.

The natural process that reunites the parts together after bleeding is produced by albuminous matter being effused from the edges of the wounds, and shortly becoming organized and cicatrized: but if any cause should intervene and prevent such union, then in too many instances phlebitis is the consequence.

Commencement and Progress of Phlebitis.—Perhaps, in a day or two after bleeding, a slight tumefaction appears around the incision; some sanious matter is seen to ooze from the orifice, and the hair about the edges is glued together. In a few days afterwards the swelling is enlarged; the lips of the wound everted; tenderness extends both above and below in the direction of the vein, and the horse begins to loathe his food, the constitution being sympathetically affected. If this is not soon got rid of, pus begins to be secreted. Ulceration takes place in the vein at every two or three inches from the original wound, and small abscesses form under the skin, and soon ulcerate through it. Great thickening of all the coats and of the cellular tissue around now takes place, and becomes a further source of irritation to the neighbouring parts. If this morbid action continues to go on, the different branches above the bifurcation take on a similar ulceration and thickening; and abscesses form about the neck and head, and, in a few cases, the same process extends downwards into the chest even as far as the heart, and ulcerates through the sternum, producing caries and exfoliation of the ribs. At other times immense effusion of serum and lymph takes place on the breast, neck, head, brain, and spinal marrow, followed by delirium, paralysis, and death. Occasionally secondary disease of the lungs and chest supervenes in consequence

of the constitutional irritation, the lungs being predisposed to or actually labouring under disease at the time.

Cause.—In some instances the cause may be unknown, and can only be guessed at; but, in many cases, it can be too plainly accounted for. Many horses have been bled in a slovenly way, and have had their neck sadly mangled with the fleam or lancet, yet the incised and injured parts have not taken on any morbid action; while others, having received only a single blow or puncture, have afterwards experienced the severest attack of phlebitis. Mr. Percivall states in his excellent works that Mr. Cherry tried many times to produce the disease by using rusty lancets and escharotics of various kinds—by passing packthread through the wound, and by ligatures, and frequent separation and friction of the granulating edges, but in vain. Professor Spooner has also tried to produce the disease, but could not. M. Patua, a continental veterinary surgeon, says that, after injecting the veins of fourteen horses, he had only one case of inflamed vein, although in each the injection of a caustic fluid was repeated twenty times, and although he had, in the course of his experiments, many openings to make in the veins of each, and considerable difficulty in introducing the tube.

I have occasionally struck with the fleam, and also punctured with the lancet three or four times, in horses difficult to bleed, before I could effect my purpose; and in no one instance do I recollect having produced inflamed vein.

It is common for farmers and others to use very great force in bleeding the cow, at the same time that the necks of these animals must be considerably rubbed and irritated by the chain and other things around their necks; and there are some wild cattle, as they are called, in my neighbourhood, whose veins lie so deep, and whose skin is so hard, that they are generally bled with a penknife, yet no accident occurs.

I well remember bleeding a horse from *the superficial brachial vein* with a great clumsy bloodstick that was found at the farmhouse; and from striking the fleam too hard, it penetrated the bone underneath, and I was compelled to use a little force in order to pull it out; and yet no inflammation ensued.

Unaccountable, however, as these facts are, the practice of bleeding with rusty fleams or lancets, or using unnecessary force with the bloodstick, cannot be too strongly deprecated. I believe the bloodstick to be a dangerous instrument, for in some cases of my own bleeding I have seen, while I was pinning up the wound, some little swelling in the direction in which the stick had passed, although I had struck my patient by no means severely. I can very readily, therefore, believe that too violent a blow with the bloodstick has been an occasional cause of mischief.

I have no doubt that the mode of pinning up the wound is also a not unfrequent cause. The lips of the wound are not brought into apposition, or the hair is permitted to insinuate itself between the edges, preventing union taking place by what is called the first intention. The use of too large a pin may also irritate, by the violence used in inserting it, or by its pressure on the wound or neighbouring parts.

Sometimes the pin may be left in too long a time, and thus may be a cause of keeping up irritation in the part; yet some persons have told me that they never take the pin out, but leave it to be got rid of by the process of ulceration. I have repeatedly known cows and calves have them left in, and no ill consequence has ensued. In these animals, however, from the greater thickness of their skin, and the less irritability of the system, there may not be so great a liability to fester as in the horse. In this latter patient I am induced to believe that inflammation is sometimes produced by taking the pin out too soon, and thereby destroying the adhesive process.

In many cases, the manner in which the pin is taken out may have some connexion with the evil that follows. There is reason to believe that the wound is fatally opened again by carelessness or unnecessary force. Many persons are in the habit of taking it out, by laying hold of the lower side and drawing the pin out on the uppermost, and thus the orifice is almost invariably re-opened; whereas, if the thumb and finger were kept on the upper side, there will be little danger of this.

Occasionally it may be produced by the animal being too soon put to work, the collar and rein producing considerable irritation; or by the collar stopping the current of blood, and, perhaps, forcing it partially through the opening, and thus displacing the union. I am disposed, however, to believe that the principal cause is *friction*. The horse is turned out too soon, and, perhaps, teased with the flies, and he consequently rubs himself against the gate, or posts, or rails,—or, if he is left in the stable, against the stall or rack, or any thing, in fact, he can come in contact with, and this before the parts are united, or even when the external wound is still gaping.

"Peculiarity of constitution," says Mr. Percivall, "has little to do with it, yet irritability of habit may prevent union from taking place." Now I think it not improbable that, as Mr. Vines would say, in some unhealthy state of the body, whether produced by atmospheric influence or otherwise, there may be a disposition for the parts not to unite; as it is well known that, in certain unhealthy states or habits of the body, wounds take on an unhealthy action, and will not granulate or heal up until the body is in a more healthy condition, and that, at times, a wound may be of no importance,

while at other times the smallest and cleanest cut, and especially a punctured wound, will be a serious affair.

Professor Spooner, after trying some experiments to produce the disease, and in which he was foiled, says, that he "must be induced to look for the ultimate cause, beyond mere mechanical or physical influence, to a peculiar idiosyncrasy in the animal—a susceptibility to take on the inflammatory action, let the exciting or proximate cause be ever so slight."

Dr. Lee also says, "from the frequent occurrence of phlebitis at particular seasons, certain unknown conditions of the atmosphere have, probably, a more powerful influence than any other cause in the production of traumatic and other varieties of this disease."

By some of the Germans many cases of phlebitis are considered to arise from "a division of a valve, and a portion of it projecting through and preventing union."

This may be so in some cases, and it may also arise from any portion of fatty matter external to the vein. I recollect that, when bleeding a horse some years ago, a pedunculated tumour of the size of a pea made its appearance through the opening into the vein. I drew it out, and found that it had brought with it a portion of its attachment two inches long, and as thick as a pin. Even this pedicle might have remained in the opening undiscovered, and produced the disease.

I should not be inclined myself to bleed from the parts that are varicosed, as they are but thinly clad with skin and often united to it; so that there would be a difficulty, if not impossibility, in avoiding the vein when pinning up, or there would be considerable probability of producing disease by the contiguity of the pin to the vein.

Phlebitis is also likely to be produced by the too frequent opening of the same orifice in the first twelve hours after bleeding.

Spontaneous Cases.—It is well known that spontaneous cases of phlebitis occasionally happen in the human being, and that pus is sometimes secreted from the lining membrane without any opening having been made into the vein, and this is carried into the circulation, and produces disease of the lungs, &c. Does this ever occur in the horse?

I well remember being in the dissecting-room when Colonel Martin kindly fetched me out to look at a five-year-old horse that was brought to the College to be examined, and that had obstruction in each of the jugulars. The horse had been in the owner's hands from a colt, and no inflammation had been known to be produced by bleeding. *So, at least, the servant said.*

Course of the Disease.—Mr. Percivall says that he believes "it will invariably be found to proceed in that direction in which

it is blocked up;" and that "in the horse it extends towards the head, contrary to the course of the circulation: that in the human arm it attacks the vein in its course to the heart, and that it is a principle laid down by surgeons that *obliteration* is always found next to the heart."

I believe, however, that medical authors do not lay this down as an invariable rule. Mr. Hunter says that he has found it above and below the incision, both in the human being and in the horse. In three cases that Mr. Abernethy describes, the inflammation extended as low as the wrist. Dr. Lee says, "when inflammation takes place in the veins of the arm after venesection, it may proceed upwards in the direction of the heart, or towards the distal extremity of the limb, contrary to the current of blood;" and that "the same circumstance takes place in crural phlebitis, originating in the branches of the internal iliac vein, the inflammation extending upwards along the common iliac towards the vena cava, or in the opposite direction from that trunk to the branches along the external iliac and femoral veins to the thigh and leg."

Professor Lizars says that "it may extend both ways."

On looking over several volumes of the Lancet, I found only four cases.

In vol. ix, p. 376, is recorded a fatal one that was under the care of Mr. Lawrence. The principal disease was below the elbow, and extending quite down to the hand.

In vol. xi, p. 715, is related another case, in which the attention of the same gentleman was requested, and here the disease was as bad below as above the elbow.

The other two were principally above the elbow, but the inflammation also extended below that joint.

In the horse the disease occasionally extends downwards. A case in proof of this is related by Mr. Riddle, in the seventh volume of THE VETERINARIAN. The inflammation extended along the whole of the neck.

Mr. Hales, of Oswestry—my much-respected instructor—in a most interesting and valuable paper, in vol. viii of THE VETERINARIAN, p. 437, is of the same opinion; but he does not believe that it extends to any great distance from the orifice—seldom more than about four inches.

Professor Coleman said that he had seen some cases of it, but they were of rare occurrence, not more than one in a hundred.

Gibson relates a case in which the horse was bled from the plate vein, and the inflammation extended upwards on the breast, and likewise down the leg. Mr. Clark says that he has known many cases of this.

So far as my own experience goes, and I have seen many cases,

the inflammation now and then extends more than four inches, several of them five inches down the neck. In a cow it extended nine inches, and in one case it penetrated into the chest, producing diseased ribs (see VETERINARIAN, vol. xii). Mr. Charnley and Mr. Mulliner, of Wrexham, have similar cases in which it extended into the chest; but, *as a general rule*, the inflammation does not extend above four or five inches below the wound, the principal mischief being produced above by the obstruction, &c.

SECONDARY EFFECTS.—Mr. Hales, from having read a paper by Mr. Arnott in the Chirurgical Transactions, communicated one to THE VETERINARIAN (vol. viii, p. 436) on the subject of the secondary effects of inflamed veins, and is almost of opinion that diseases of the chest and lungs may succeed them, and produce death.

So far as I am concerned I have no doubt whatever on the subject, although it is not an invariable rule, either in the human being or the horse. In the cases quoted from The Lancet we find that there was no disease of the chest, and the other case was not fatal, nor was it so in two cases that I am acquainted with in the horse. The only one I ever saw was in a cow. In the three other cases mentioned in THE VETERINARIAN, in only two was there disease of the chest.

That inflamed lungs may succeed this disease, and terminate in death, is very probable; but it is well known that it is often produced as a secondary effect from other diseases as well as from this. In short, I would say that the lungs appear to be the most vulnerable part of the body, and the most likely to take on disease where continued irritation has been set up in the system from any chronic local disease. I have had several severe cases which have been under treatment for three, four, and five months, and where half a dozen abscesses have been formed above and below, and I have been compelled to dissect out a diseased vein, nearly the length of the neck, and almost as thick as my wrist; yet in none of these cases has secondary disease of the chest come on.

It is a favourite doctrine with several veterinary pathologists, that secondary disease of the lungs may be propagated by the absorption of pus into the system. I have not time now to inquire whether this be true or erroneous, but it is a question that deserves the most serious consideration.

COMPARATIVE NUMBERS IN THE HUMAN BEING AND THE HORSE. It has been asserted that this disease occurs far more frequently in man than in the horse. Mr. Alcock asserts that one of his pupils had taken an account of more than 800 cases of bleeding, and only four among them had fistula. His father, during nine years had bled some thousands, but had not met with a single un-

toward accident. A surgical friend of mine—Dr. Hopkins, of Malpar, says that he well recollects a patient of his that he must have bled at least fifty times, and generally from the same vein in the arm,—that it only festered the first time he bled her, and never afterwards, and that quickly disappeared.

I doubt whether it would occur oftener in the horse, had we the means in our power to keep the parts from being disturbed.

TREATMENT.—If there is nothing more than a little tumefaction and oozing of pus, we gradually find that by fomenting the parts three or four times a day, and afterwards applying a warm poultice, giving a dose of physic, keeping the head up, and occasionally bleeding from the other vein, we get rid of it in the course of a week or nine days; and I do not recollect more than one case in which I did not succeed, provided I had seen the case and attended to it within two days after inflammation had made its appearance. I have, now and then, in addition to the other remedies, applied the actual cautery.

Where there is an unhealthy abscess around the orifice, I should apply some stimulating application, and what I generally use is the bichloride of mercury; but I do not think it prudent to apply it so deeply as to destroy the coats of the vein.

If the inflammation does not stop here, it will extend along the vein, either upwards or downwards, or both, and an abscess will form, perhaps, two or three inches distant from the wound, or shew itself in a small tumour just under the skin, and on opening it only a very small channel can be traced into the vein.

I have often thought, from the abscesses forming at intervals of two or three inches, that valves in these situations were the cause of the obstruction, and the abscess between them the consequence.

In these cases the best plan would be to lay them open, or pass a seton through them, and inject a weak solution of the sulphate of zinc or the bichloride of mercury, so as to bring on healthy action, and sometimes the parts will soon heal up, and the neck will get well in that place, and all appear to be right; but, soon afterwards, especially if the horse has been too early turned out or sent to work, or even without either of these things, similar abscesses will form above the others at intervals of two or three weeks, and will heal up below, and continue to appear above, until they have fairly reached the ear, and then they will get well. In some of these cases I have applied blisters, and apparently with good effect; but in others I have thought that the blister has been injurious. One case was under my hands for three months, and ulceration had existed a full month before I saw the animal. I tried various injections and tents, and blistered him five or six times, until at last, from the excessive thickening of the vein and

the parts around, and ulceration still going on, I began to fear that I should lose my patient unless I adopted some decisive course. I therefore cast him, and dissected out the vein, which was as thick as my wrist for eight inches in length, and close up to the bifurcation. This, of course, left a most formidable gaping wound, from four to six inches wide.

Immediately after the operation I applied a warm bran poultice, and, two or three days afterward, suppuration commenced. I then inserted two metallic sutures to hold the parts together—kept the poultices occasionally on, and in the course of three weeks the wounds were healed and the animal went to work. I saw him about two months ago, and there was very little trace of so formidable an operation remaining. I had had almost endless trouble in keeping the poultices on, and preventing him from rubbing the parts, for he was not quiet a moment; and one day I thought that I should have lost him, for he had broken loose, and rubbed his neck so much that the edges of the wound were swollen to the thickness of my arm.

The practice adopted by many of applying blisters in recent cases I do not quite approve of, for the blister removes the hair, and causes a great eyesore, especially in hack horses, that are wanted for frequent use.

In some cases in which the cautery has been applied to the wound, the integument has healed over, leaving an abscess underneath extending into the vein, and producing inflammation there.

I have seen several severe cases in which union has taken place in the integument; but abscesses have shewn themselves in three weeks or a month, proving that the too rapid healing of the external wound does not cure the disease.

One case in particular you will forgive me for relating. It was that of a mare that died in consequence of the rupture of the abdominal muscles, from some unknown cause, when heavy with foal, and after she had travelled with a gig a distance of sixteen miles. I saw, before she died, that there was a tumour formed on the jugular vein, and, after her death, I cut away that portion of the vein and examined it. The vessel was, at this place, from one-eighth to one-fourth of an inch thick, and from the inner coat was thrown out a deposition of lymph that extended from one side of the vein to the other, for about an inch in length, leaving a space on each side sufficient for the blood to pass. This tumour occupied a space between two valves. The valve above the tumour seemed to be larger than any of the others, and a little coagulated blood surrounded the tumour between this valve and the one immediately below. There was adhesion between the tumour and the parietes of the vein, but none between it and the valves.

This strange growth, and the thickening of the parietes of the vein, were confined to the space between these two valves, and broke off abruptly above and below, leaving the remainder of the vein sound.

Between the tumour and the bifurcation, a distance of six inches, there were two valves; and from the tumour to the breast, a space of about twelve inches, there were no fewer than six valves; so that the valves were more numerous than usual, and more numerous below than above.

In one case of inflamed vein the external wound was completely healed in two or three days after bleeding, and all appeared to be going on well for about a month, when it opened again, and was five months in healing.

Sometimes, when the vein is in an ulcerative state, and no great thickening existing, I have laid it open, and applied caustic dressings, and it has healed up. I have heard of the vein being laid open through the parotid gland up to the ear, and that a cure has been effected, but with a great deal of trouble, occasioned by a sinus in the gland. I should not think that this practice was advisable, or scarcely ever necessary.

I have recently had a case in which five or six abscesses had formed above the original wound, and the two superior ones burst through the parotid gland; the extent of the ulceration being evident in the quantity of saliva that flowed through each orifice. A cure was effected by a few simple injections.

Although somewhat objected to in the present day, yet I do think that great good may be done by the steady and persevering use of fomentations and poultices; but it must not be merely the application of them for an hour or two now and then—their use must be long continued, and especially that of the poultice. The latter appears to me to have a most salutary effect in bringing about a more healthy action, both before and after suppuration, and, in fact, in every stage of the disease.

I also think that we occasionally do harm by the use of too strong and stimulating caustic dressings or injections, thereby destroying the very coats of the vessels, and, of necessity, producing a long and tedious sloughing process. It is my firm opinion that injections of a more simple nature, and the continuance of the poultice, will, in the majority of instances, bring about a healthy action without so much sloughing.

We may also do harm by the caustic poisonous injections escaping down the vein, and getting into the circulation, unless pressure is made on the vein below.

HEMORRHAGE.—Sometimes secondary hemorrhage takes place to a considerable extent in consequence of ulceration and sloughing.

There may be external injury and rupture of the vein, as in the cases related by Mr. Hawthorn, of Kettering (*Vet.*, vol. viii, p. 343), and Mr. Daws, of London, vol. ix, p. 433.

A case occurred in which a fearful gash was made in the vein of a colt that swerved while a young man, contrary to his master's orders, was endeavouring to bleed him with a lancet. The blood gushed out at a fearful rate. The master, however, was presently at hand, and arrested the flow of blood by having pressure made above the orifice: he then examined the wound, and found it between three and four inches in length. It required four pins to secure the neck from further hemorrhage. This, however, returned at the expiration of eight days, and it became necessary to obliterate the cavity of the vein. (*Vet.*, vol. viii, p. 442.)

In these and similar cases it is usual to apply plugs, pins, or the cautery, in order to staunch the wounds: but I think that the best plan, if there is no particular swelling or inflammation about the parts, is to cast the horse, and apply the ligature to the vein at once, as in the cases related by Messrs. Hawthorn and Daws; for it appears that in the first case, although the veins of the neck became in a few hours distended almost to bursting, and there was fear of the ligature giving way, yet, by fomenting the head occasionally, it subsided in the course of a day or two, and in twelve days after the operation the ligature had sloughed away and the wound healed up.

In Mr. Daws's case the ligature sloughed away on the fifteenth day; but on the following day the head, neck, &c. commenced swelling, and in the course of that day the animal died. On examination there was found secondary disease of the chest, which was the cause of the horse's death.

In the case of the colt whose vein was so fearfully opened by the lancet, I respectfully submit that it would have been better to have applied a ligature in the first instance, as we could not have expected so large a wound to have healed readily up, and it would have averted the danger of the secondary hemorrhage that ensued.

THE PROPRIETY OF APPLYING LIGATURES.—Mr. Percivall says that "obstruction of its canal has been adduced as a cause of inflammation of a vein, but without foundation, however, for ligatures on the veins of horses are not attended with any inconvenience," and this, he says, from experiments which he has tried in order to produce phlebitis. I am not aware of this having been put fairly to the test in the horse, except in the two cases before mentioned by Mr. Hawthorn and Mr. Daws; and I doubt whether, in Mr. Daws's case, we can justly say it succeeded, as great tumefaction of the head, neck, &c. took place, accompanied by a discharge of blood from the mouth and nostrils, and speedily terminating in death.

Mr. Gendrin says that inflammation of the veins has been observed to take place in the human subject after ligatures have been applied for the cure of varix. Mr. Travers quotes several instances; and both Oriander and Meckel have seen inflammation of the umbilical veins, and, consequently, of the venæ portæ, developing itself after a ligature on the umbilical cord. Dr. Lee also observes that "it has arisen in many cases from the application of a ligature."

Supported by authority like this, I would therefore say that, notwithstanding in some cases it would be justifiable and proper to apply a ligature around the veins, although the case may now and then terminate fatally in consequence of this procedure, yet I really believe that less pain and irritation would be set up than by the slow process of inflammation, ulceration, and sloughing, and which are as likely to produce a similar effect in one case as in the other.

Bichat and Travers have shewn that the internal tunic is not divided by tight ligatures around the veins.

The hour of closing the discussion having arrived, the consideration of this Essay was postponed until the next meeting.

FEBRUARY 18, 1840.

The President in the Chair.

Mr. Barnes was elected a Member of the Association.

The following interesting communication from Mr. T. W. Mayer, V.S., of Newcastle-under-Lyne, on a singular Change in the Milk of a Cow, was first read.

To the President and Members of the Veterinary Medical Association.

Gentlemen,—AN acquaintance with the anatomy, physiology, and diseases of animals generally, having become a portion of your peculiar study, and an object of deep interest to us all, a few remarks from one, upon whom you have lately conferred the honour of corresponding member, and who is anxious to fulfil the duties you have imposed upon him, will, I have no doubt, meet with your candid consideration.

It is not my purpose in the present letter to direct your attention to any observations of mine on the subjects which have been properly defined as worthy of the remarks of your corresponding members: I have simply to narrate a singular instance of deposition of earthy matter in the milk of a cow.

In the month of August last, a farmer requested my advice about a cow from whose milk a whitish sediment was deposited at the bottom of the pans to the extent of nearly one ounce per quart.

He stated, in answer to my inquiries, the following particulars. After he had had the cow about two months, she was put to the bull, and during that week she did not give her milk freely: but they perceived—what had never taken place before—a thickish sediment at the bottom of the pans, which remained, on the milk being poured off, and which being dried, had the appearance of very fine chalk. This sediment was not regularly deposited. On some days there was no appearance of it; but if the cow did not give her milk so freely as she ought to do—a habit she was very guilty of—there was always, afterwards, a very considerable sediment. The quantity of milk at this time was diminished, but not altered in taste or colour; the butter, however, was much whiter than natural, and had acquired a sharp acrid taste. The soil of one part of the farm was of a marly nature, the other part of a dark sandy appearance, and newly inclosed common land. The water was very good. The cow's appetite was not affected, and her bowels and urinary secretion were regular. The farmer has still the same cow, and she continues, though at much longer intervals than before, to part with this substance in her milk, and invariably after holding it, which she was too frequently apt capriciously to do.

I forwarded some of the substance to my kind friend, Mr. Morton, for examination; and the following is his opinion, for which, and the trouble he has taken in the matter, I cannot sufficiently express my obligation.

"Its appearance is that of a chalky-white substance, having neither taste nor odour. It is slightly absorbent and insoluble in water. Its powder feels soft between the fingers, and, viewed as an opaque object under the microscope, it at first appears amorphous, but, on closer inspection, several minute crystalline plates are perceptible in it. A fragment subjected to the action of the blowpipe loses about half its weight, becoming black and exceedingly friable, during which it emits an odour resembling burning animal matter. If the flame is allowed to play on it for some time, it again becomes white. Boiled with caustic potash, it exhales the smell of milk, mingled with faint ammoniacal fumes.

"Hydrochloric acid being added to it, a solution of the earthy parts readily takes place, accompanied with an extrication of minute bubbles of gas. The residuum possesses viscosity, and is coagulated by acids When the solution is agitated, minute flocculi give to it a turbescence. These being removed, and water of ammonia added to the transparent solution until neutral, a gelatinous deposit takes place. Phosphate of soda and ammonia induce slight

opalescence in it. Oxalate of ammonia throws down an abundant white precipitate from it.

"From the above analysis I am induced to infer that it consists of about one-half of animal matter, probably caseum; the other half consisting of the phosphate of lime, with a little carbonate of lime and ammonia."

There are one or two points connected with this case that are extremely interesting.

We all know the power of different glands to form different secretions, and here is a gland forming a totally different substance from what it was intended to do, and that in considerable quantities. To what cause can this be assigned? My own suspicions led me to think that there must have been something peculiar in the water, to which alone the animal had access; but such was not the case. A derangement of the digestive organs might be more likely to influence the whole matter, yet even that is not of a character to injure the appetite or the secretions. I am, therefore, inclined to think that it is one of those extraordinary instances of Nature's operations of which there is no method of ascertaining the accurate cause. The retention of the milk may probably give rise to some chemical action.

For the method of treating this affection, I am indebted to Professor Dick, of Edinburgh, who will, I hope, pardon this use of his name. He has had several instances of the like character, and stated, in a conversation with my father last autumn, that he had found, in the first place, a regulation of the bowels, and, next to that, the administration of tonics, to be completely efficacious. An attention to the diet may be added, which, indeed, in every disease of the ruminant should be carefully attended to.

Mr. Wardle presented the carcass of a lamb that had died suddenly. It was lambed on the 10th of this month, and was a twin-lamb, and the larger of the two. He saw it with the ewe about ten o'clock on the morning of the 15th; and, although it was not "the month of May, when the lambs do skip and play," it was skipping joyously about by the side of its dam, and was apparently in perfect health. He returned in about an hour, and the little fellow lay dead. This was a circumstance of too frequent occurrence; but he was happy to say that in this case the President had kindly promised to examine the carcass, and perhaps some important light might be thrown on the subject.

The President said, that there was no lesion detectible in either the thoracic or abdominal cavity; but in the cavity of the brain there was congestion, or, in fact, ecchymosis of the vessels of the plexus choroïdes. It was most strongly, beautifully marked, if he

might use the word in such a connexion, and sufficiently accounted for the sudden death of the animal.

As to the cause of this ecchymosis, that was a very different thing. This membrane, and the vessels which permeated it, were exceedingly thin in their structure, and a slight accidental shock or blow would be sufficient to rupture them. In the moment of extreme gaiety the voluntary efforts of the animal might effect this. Rupture had taken place, and had produced ecchymosis. The meninges of the brain were not at all reddened. That was a curious and interesting circumstance, and should be carefully noted—the seeming independence of these membranes, at least to a considerable extent.

This little fellow gave them the opportunity of examining the umbilical vein. It was still pervious, but would gradually become closed. They could also perceive the connexion between the bladder and the umbilicus by means of the urachus, and how this would otherwise be torn asunder, and the bladder fall into the cavity of the pelvis. The gradual change which occurs in order to adapt it to the position in which it is afterwards to be placed, is here pleasingly illustrated. The vasa vasorum on the coats of the larger vessels are here seen in a very satisfactory manner. The *vena azygos* is curiously placed on the left side, instead of the right.

The cause, then, of this sudden death was a rupture of some of the vessels of the plexus choroïdes.

Mr. Wardle had likewise placed on the table a foot from a patient that had been treated for some length of time, both by the owner and a son of Vulcan, as a case of shoulder lameness. It was with difficulty that he could persuade them that it was actually Laminitis. The horse was of little value, and destroyed at his recommendation. He preserved the diseased foot, thinking that it might be useful to some of the junior members of the Association.

The President stated, that it was a case of chronic lameness not unfrequent in the heavier cart-horses. The wall of the foot was composed of fibres running in a longitudinal direction from above downwards. In this case, as in laminitis during the acute stage, a separation took place between the horny and sensible laminæ, and, the coffin-bone receding from its connexion, the point of it pressed on the horny sole, giving a peculiar bulge at the point of the toe; not the convexity of the pumiced foot, but that which is the consequence of the sensitive laminæ having lost their connexion with the horny sole. It would seem that the acute inflammatory action had subsided, and the peculiar position of the sole was the circumstance most to be observed.

The immense thickness between the external wall and the laminæ would be readily observed, and the direction of the two pasterns

being nearly perpendicular, instead of possessing the natural oblique position, which, when not carried to an extent that indicates weakness, is so desirable. The navicular bone, likewise no longer supporting the weight of the animal, is thrown comparatively out of use.

Another interesting case was presented to the attention of the Association by Mr. Powell, of Bermondsey: it was that of an enlarged heart, found on the examination of a carriage horse that had died after an illness of two days. He appeared as if he were attacked by a slight catarrhal affection, on which account he was laid up for two days, some very gentle exercise, however, being taken. The respiratory and circulatory action were very little increased, and the usual remedies were applied. He was found dead that morning. On examination the unusual size of the heart immediately attracted attention, and it was found to be nearly fourteen pounds in weight.

The President was requested to examine it. He obligingly consented, premising, however, that he had had no previous opportunity of seeing this important morbid specimen. There was evident laceration of one of the auricles, but, before he spoke of that, he would direct the attention of the Association to the heart itself. The slight catarrhal affection could have no connexion with that of the heart, unless, which was not the case, there had been a pulse that would have led the veterinary practitioner to suspect some abnormal state of that organ. From several cases which he had seen, he was much inclined to suspect that this hypertrophy of the heart was of much more frequent occurrence than was generally imagined. The parietes of this heart were evidently much thicker than they are usually found to be. It was, altogether, considerably larger than usual. The right ventricle appeared to be more flaccid than in its normal state, and, on pressing the apex of the heart, the parietes appeared, on that side, to be exceedingly thin.

He was inclined to agree with Mr. Pritchard that the heart is more frequently the subject of disease than is generally imagined, and altogether independent of any of the other viscera. He spoke particularly of hypertrophy; and it could not be denied, that the parietes of the right ventricle of this horse are more than usually thin.

The sudden cause of death was referrible to the right auricle, in which there is an enormous rent. The blood would escape with immense rapidity from such an opening, and the animal would die from internal hæmorrhage. There was nothing, however, to account for the sudden rupture of the auricle. There was no obstruction between the auricle and the ventricle. The valves were in

their original and healthy state—no interposition of cartilage between the tricuspid valves and the carneæ columnæ. There was no blood in the left ventricle, but some in the auricle: the apex was thinner, and there was on it, if one could believe it, a kind of cicatrix.

There was no question as to the cause of death. It was the laceration of the auricle: but what was the cause of that! We should naturally reply, the pressure of the current of blood; but if so, what was there to increase its rapidity and force at that time, or to diminish the power of the auricle to sustain that pressure! There does not appear to have been any derangement of the vascular system—no access of inflammation—no increased pressure from the circulation. There was a degree of chronic disease in the organ—a state of flaccidity which the right side of the heart exhibits oftener than the left. There had been disease in the muscular parietes of the heart for a considerable period, and this continued and increased until these parts were no longer able to resist the force of the current. Still, however, there might have been circumstances operating at that particular moment which gave increased force to the circulation.

The auricles of the heart are more subject to disease than is generally supposed, particularly the right one. This is the grand receptacle of the venous blood from every part of the frame. [The President here gave a lucid description of the auricles, and particularly of the right auricle. Although the contractile power of this viscus has little to do with the general force of the circulation, it is subject to disease. Specimens of ossification of the right auricle not unfrequently present themselves in our museums. There was one perfect specimen of it preparing here, but a greyhound got at it, and ate it, corrosive sublimate and all. It was taken from an old horse in cab-work that had worked as usual a few days before his death.] If he was able to undergo the labours to which these poor animals are too frequently exposed, it would seem as if we must infer that the contractility of the right auricle is not of so great importance in the circulation as we are taught to believe. Ossification of the heart and arteries was denied by Professor Coleman to exist in the horse, but here was a perfect specimen of it. The horse is subject to this disease, but it is not so dangerous as some describe it, otherwise we should hear of many more sudden deaths. The human being is told to be cautious with regard to the exercise which he takes, and not to hurry himself up hill; no such care, however, is thought of for the horse, and yet the specimens of ruptured heart are very few. It is a question that cannot be satisfactorily resolved, whether this accident takes place during the diastole or the systole of the heart—

whether it is to be traced to the rapid flow of blood from the cavæ into the auricle, or the contractile action of the parietes of the auricle on that blood. In some measure both are concerned; but the parietes of the auricle do not appear to have sufficient thickness or power to aid much in the production of the lesion. We know not as yet, however, sufficient of the cause, or progress, or general phenomena of this disease to warrant us in giving any decisive opinion of the probable situation or cause of these ruptures. One thing, however, is well known, that, although we have not many cases of ruptured heart to record, the lesion has been found in both the ventricles and both the auricles; sometimes with apparent cause, and at other times without any cause that can be detected or even guessed at. The right side of the heart is the most likely to be ruptured, and he believed was actually most frequently so, from the pressure of the blood into the heart; still, in our present imperfect knowledge of the matter, we were not justified in speaking with any degree of positivity.

The President having vacated the chair, Mr. Daws, V.P., was requested to officiate during the remainder of the evening.

Mr. Daws observed, that a subject like the present, which Mr. Cartwright had introduced for discussion, was fraught with interest, and full of practical information. He thought Mr. Cartwright entitled to their praise for the clear and straight-forward manner in which he had handled the subject.

So far as his (Mr. Daws's) observations went, he had never been able to account for *Phlebitis*, unless it was from an unhealthy action being set up in the wound, and extending to the adjacent parts. He had had several cases occur when a highly polished instrument had been used in a skilful manner, yet phlebitis supervened; and he had often seen others hack and cut horses' necks with rusty instruments without any untoward effect ensuing. During the prevalence of the influenza some few years since, he observed more cases of phlebitis than at any other time; in fact, a wound of any description was then disposed to assume an unhealthy aspect.

The parts both above and below the orifice made in the vein equally partake of the inflammation; but more tumefaction ensues towards the head from the current of circulation being arrested.

Mr. Cartwright had asked if spontaneous inflammation of veins ever occurred in the horse? He replied, that he never saw it; but, perhaps, some gentleman present could enlighten them on that point.

Cases sometimes occur where, if he might be allowed the term, ulcerative inflammation has set up around the orifice in the vein, and every time the horse feeds hemorrhage to a considerable extent follows, without any active external inflammation accompanying it; and the poor patient in time becomes reduced to a mere skeleton if remedial measures are not adopted.

The application of a ligature around the vein above the orifice is here imperiously demanded. Other means will be entirely useless, except that, in the first instance, a slight application of the actual cautery might be effectual in closing the external wound.

With regard to the general treatment of phlebitis, Mr. Daws could not speak so positively as Mr. Cartwright, who says, that in all his recent cases he had been successful, although the treatment he pursued was in accordance with the scientific mode adopted by Mr. Cartwright. For thrombus, cooling

lotions, fomentations, cataplasms, &c.; in fact, an antiphlogistic plan of treatment. Where induration and enlargement had taken place in cases of long standing, the repeated application of blisters and iodine frictions would be found of service. In that species resembling fistula, the injections of stimulants, as the liq. zinci sulph. dilut., to induce a healthy action in the wound; or if a putrid coagulum remains within, so as to keep up a source of continual irritation, the careful use of the scalpel is required in order to lay the fistula open, and reduce it to a simple excised wound.

The case of mine which Mr. Cartwright has quoted from THE VETERINARIAN was not one of inflammation of the jugular vein, but where an injury to some extent had taken place just before its entrance into the cava.

Another word, in conclusion, respecting the use of ligatures: they produce no inconvenience to working horses, unless they are fed from the ground: then the head becomes swollen from retention of the blood in the veins. I once rode a horse for nine years whose jugular veins on either side were obliterated.

Mr. Cartwright replied, that he was not aware that he had described Mr. Daws's case as one of inflamed vein. He merely adduced it as shewing the effects of ligatures placed upon veins; and, there being but few such recorded, he considered himself warranted in reasoning from it as to the consequences which might be anticipated when the usual channels of the circulation are obstructed.

He would ask if Mr. Daws recommended the application of a blister in the early stages of phlebitis? For his own part, he could not refrain from thinking that the application of it was not in strict consonance with science.

Mr. Daws.—That will depend very much, if not entirely, upon circumstances. If there were merely a swelling, constituting a thrombus, with much surrounding and contiguous inflammation, he certainly would, in the first instance, have recourse to the ordinary antiphlogistic remedies only; but had the disease existed for any length of time, and the parts become indurated, he did not think that he should hesitate to apply a blister. If the edges of the wound had become scirrhous, the application of some potential cautery might rouse them to healthy action; and should any hemorrhage supervene, he would not object to the employment of the ligature.

Mr. Mackinder approved the employment of blisters even in the very earliest stages of inflamed veins. His object was to excite inflammation in the external parts, thus effecting a cure by revulsion, and preventing the obliteration of the vein.

Many cases had fallen under his notice, in which this course of procedure had been attended with the most favourable results: he therefore felt himself warranted to speak of it in terms of commendation.

He well remembered a case in which, for the period of ten days, there was an escape of blood from the orifice, and it was feared that ultimately it would prove fatal. The use of caustic substances at length formed a plug which closed up the opening, and, by repeated blisters, a cure was effected.

Cases similar to this had been treated by him in the same manner. It might, therefore, be designated his general practice; although he confessed that he did not recommend caustic applications so severe as those objected to by Mr. Cartwright. In chronic or long standing cases, he would, without hesitation, and at once apply a blister. It would either cause a dispersion of the tumour, or induce the formation of an abscess, which, bursting externally, would afford relief. When the inflammation extends to the parotid gland, as is frequently the case, it is most desirable that an operation should be avoided. This may be done if a blister be applied at the proper time. Poultices and fomentations he had found far less effectual.

Mr. Cartwright could scarcely reconcile the treatment advocated by Mr. Mackinder with the views he had been induced to take of the progress of this disease. Is it not, in the first instance, merely an inflammation of the integument which extends to the cellular connecting tissue, and subsequently to the vein? If this is the case, of what avail can be the setting up of inflammation by means of blisters in a part where inflammation already exists?

Mr. Mackinder considered that, under such circumstances, blisters act as depletents as well as counter-irritants; besides, it is possible that a new and healthy action is induced by them, which otherwise would not take place. In a somewhat extensive practice, the benefits resulting from their use warranted his thus speaking of them in commendation, and from what he had seen of their effects he was induced to continue their employment.

Mr. Dycer begged leave to ask Mr. Cartwright if he considered it probable that inflammation of the jugular vein might, either directly or indirectly, give rise to a dyspeptic affection? If so, did he know of a case in point? His motive in asking this question was to elicit, if possible, something confirmatory of an opinion which he had formed of a case that came under his immediate notice. It was as follows:—

A bay horse, six years old, and in good condition, had induration of the near parotid gland, consequent upon disease arising from a puncture with a stable fork. Having been attacked with a slight catarrhal affection, he was bled on the off side, from which followed inflammation of the vein, extending to the parotid gland, in which various sinuses became formed. These were treated in the usual manner for some months, when he got well; not, however, without leaving induration of the gland.

During the active disease of the gland the horse fell off in flesh, which he attributed to the constitutional irritation necessarily attending such a case; but on his recovery he still was in bad condition, for which he put him through a course of tonic medicine, but with no good effects. Being rather puzzled as to the cause of this emaciation, after some consideration, it struck him that the parotid glands being both indurated, the grand source of saliva was cut off. This fluid was evidently much diminished in quantity, as the horse, which was a spirited animal, did not froth at the mouth as he was wont to do when champing at the bit previous to the accident by bleeding. Considering himself to be right in his opinion as to the cause of emaciation, he desisted from all farther remedial means, and eventually lost sight of his patient in very poor condition.

In citing this case of dyspepsia, having for its cause (in his opinion) the want of the natural supply of saliva, it must not be imagined that he does so with any degree of positivity, since his opinion must be of necessity purely hypothetical, inasmuch as we do not know—at least he does not—the chemical modus operandi, if he may so express himself, of the saliva in the process of digestion, or whether it is subservient to any greater object than that of forming the masticated food into a pultaceous mass. However, perhaps Mr. Morton would give his opinion on the case. And if he agreed with him in his opinion as to the cause of emaciation being the abnormal state of the gland, whether or not an artificial saliva could not be formed that might be readily mixed with the food, and thereby obviate the bad effects arising from the loss of the natural secretion.

The Secretary could not conceive it possible that any gland in the body, however small it may be or ill understood its function, was of no use. "Nature makes nothing in vain." We may not be able to understand the uses of many parts, or comprehend how the function of many organs is carried on; yet this is no argument against either the utility of the one or the existence of the other; for, at best, we know but in part.

The secretion from salivary glands, however, is well known to perform a very important change in the food; the saliva first operating mechanically and then chemically upon it. By it many soluble substances are dissolved; and it has been said that it possesses the property of converting farina into sugar. Now, as the nutritive principle of most of our patients consists of this proximate substance, we have at once a clue to its usefulness. If, then, any portion of it is withheld, what must be the necessary consequence? Impaired digestion, with its attendant evils.

When an organic change takes place in a gland, altered function necessarily follows; and although it might be possible to supply the wants of the system by artificial means, yet he thought they would not be equal to those which nature furnishes. By the aid of chemistry we appear to acquire a knowledge of the constitution of bodies; and yet we may be wrong in our surmises. If this remark will apply to inorganic matter, what shall we say to organic, where we have the powers of vitality if not opposed to at least governing chemical action?

Should it, however, be the case, that, from scirrhosity or induration of the parotid gland or glands, the digestive process appeared to be interfered with, he could see no objections to the employment of an alkaline solution, since the saliva of the horse is alkaline in its nature; but even then we should not have other principles which are always to be met with in this secretion, and to which, in all probability, its peculiar action is even in a greater degree referrible.

Mr. Mackinder could not think the blemish which occasionally supervened to be a matter of much importance. As it respected his mode of treatment, however, it might be objected to; and however much his practice might be inconsistent with his theory, he, nevertheless, could assure the members that the former had generally proved successful.

Mr. Dunn.—In the performance of the operation of bleeding, has Mr. Cartwright ever known the carotid artery to be punctured? and if so, what were the results?

Mr. Cartwright had heard of instances, but none had fallen under his notice. He believed the result would be the formation of a spurious aneurism.

Mr. Dyer said, that it must be allowed that "facts are stubborn things:" still he considered Mr. Mackinder's practice irreconcilable with his theory. He did not at all object to the use of blisters in inflammation of the vein when he had used the usual antiphlogistic means, such as poultices and fomentation; but he certainly did to the indiscriminate use of them. He agreed with Mr. Cartwright, that there was a seeming contradiction in the use of blisters in simple tegumental inflammation; and he would go farther, and say such would be the case when the vein itself was affected; the parts being so contiguous, must necessarily sympathize in any morbid action that might be set up in either of them. The treatment of the first stages of inflammation of the vein by Mr. Mackinder he considered to be inconsistent with surgery: it was, in his mind, only adding fuel to the fire.

Mr. Cartwright reiterated his objections, which he, too, founded upon practice. Blisters he had never found to be half so efficacious at its commencement as fomentations and poultices; but he repeated that which he had advanced in his paper, namely, that, to obtain real good from the use of them, they must be persevered in for some time. There was also another objection which might be advanced against the employment of blisters—the abrasion of the hair for a month or more after its application; and it is well known that small wounds sometimes leave behind them even greater blemishes than large ones.

Mr. Wills.—Are horses whose jugulars have become obliterated, or rendered impervious by inflammation, duller than others, or more frequently the subjects of ophthalmia?

Mr. Cartwright had not observed that they were less lively than before, although it has been said—and perhaps with some degree of truth—that they are very liable to become the subjects of some cerebral derangement. He certainly should not recommend a horse to be turned out to grass soon after he had lost a vein, since there takes place much swelling about the jaws and head—a heaping up or congestion of the blood—arising from its return being impeded. There is also sometimes a peculiar rigidity of the muscles of the neck, and an inability to stoop down to feed at grass. As it respects ophthalmia, he was inclined to think that they may be more likely to take it on than other horses; but he had never seen a case in point.

Mr. Cooke.—Will Mr. Cartwright explain the cause of coagulation of blood in the vein, and why inflammation in the jugulars extends towards the head and not the heart? Has he seen the same thing take place with other veins in the body, such as the superficial brachial and the saphena?

The time of adjournment having arrived, Mr. Cartwright reserved the reply to these questions until the next night of meeting.

FEBRUARY 25, 1840.

There was laid upon the table a splendid specimen of Renal Calculus taken from a Horse, obtained from the knacker's yard. The only history that could be elicited from the man who brought it was this. The horse was bought to be destroyed, being in the last stage of emaciation from disease and old age.

Upon opening the animal the lungs were found engorged with blood, and one kidney much enlarged; the bladder was also inflamed, and contained a quantity of dark-coloured urine, in which floated much coagulated bloody matter, but no gravel nor calculus existed in it.

The President said that the morbid specimen before him was at the present time highly interesting, since lately the minds of the students had been particularly directed to these concretions, from his having recently extracted a cystic calculus from a horse now in the infirmary. It would be observed that, with the exception of increased size, the kidney presents no abnormal appearance externally. The tubes also leading from it are healthy. Upon laying it open the cortical portion is likewise unaffected; but the medullary part has become absorbed by the pressure of the calculus, which is of an immense size, and has caused a distention of the pelvic portion of this organ to a surprising extent. The weight of the concretion is thirteen ounces and a half, troy. Its composition he con-

jectured to be similar to those which are usually found in the like situations.

It is evident that its formation has been a work of time; and as the kidneys do not possess a high degree of sensibility, it is more than probable that particle after particle has been deposited, and these would scarcely interfere with the function of the organ until some considerable size has been attained by the calculus.

There was another circumstance which he thought deserving of notice. Renal concretions are more frequently met with in the lower orders of animals than in man. This, in all probability, is dependent upon the relative positions of parts. In man these are vertical, in the horse horizontal. Particles of calcareous matter being deposited in the kidney of the human subject, by aggregation form a mass, which soon finds its way down the ureters into the bladder, where it becomes the nucleus of a calculus; while in the horse they remain in the pelvis of the kidney, and, gradually accumulating, form a body varying in size and shape. Occasionally, however, they are passed onwards, and form a cystic calculus, as we have lately had proof, and an account of which the members would now have from their Secretary.

The Secretary then gave the following description of a case of VESICULAR CALCULUS, at present in the College infirmary.

The symptoms, when the horse was admitted, Dec. 22, 1839, were these: The urine is voided in small quantities, and with some difficulty; very high coloured, and viscid; and particularly is this the case after exercise, when it appears to be sanguineous. There is also present some febrile excitement, the pulse being accelerated and the mucous lining of the nostrils and eyelids injected. The altered state of the urinary secretion has been observed for some time past; but latterly the animal has expressed more pain while voiding it. Restrict the diet to mashes, and give aloes ʒiv in ball.

Dec. 23*d.*—The bowels are responding freely to the aloes.

Dec. 24*th.*—The urine is voided more frequently than is natural, and is also of a higher colour; but there is less pain accompanying the act. The febrile excitement is abating, the mucous tissues are regaining their healthy appearance, and the pulse has fallen to the natural standard; the animal also feeds well on the allowed diet. This may consist of bruised corn, with mashes.

Dec. 26*th.*—Some of the urine having been collected, and allowed to stand in a glass vessel, it was observed to deposit a quantity of earthy matter, and by the ordinary tests to contain much albumen. Upon an examination of the bladder per rectum, the existence of a calculus was detected; and Professor Sewell having in remembrance the last case on which he operated, which unexpectedly proved to be one of lithotrity, or crushing of the stone; and consi-

dering that the friable nature of the calculus in that instance probably arose from Mr. Beeson, V.S., having, for some time previously, exhibited the hydrochloric acid, deemed the present case a fair one to test the power of lithontriptics over calcular concretions. Two drachms of the hydrochloric acid were therefore directed to be given in a pint of water daily, the diet being simple.

Jan. 1*st*, 1840.—A change is perceptible in the character of the urine. It has become light-coloured and opalescent from the diffusion of salubrious matter through it, which is deposited in very large quantities after the urine has stood for some time; it, however, still possesses viscidity, and retains its alkalinity, effervescing with acids, and becoming translucent, and restoring the blue colour of acidulated litmus paper.

The calcareous deposit consists principally of the earthy carbonates.

From this it was inferred that a disintegration of the calculus was taking place, and the acid was directed to be given as before ordered, particularly as the animal's general health was apparently good.

Jan. 7*th*.—The quantity of matter deposited is not so great; the urine is passed without pain, and is pale-coloured; but it becomes sanguineous by exercise, and retains its viscosity and alkaline character.

Jan. 14*th*.—Since the last report but little change is perceptible. Give the draught twice in the day, morning and evening.

Jan. 28*th*.—The mouth has become sore from the action of the acid. The urine presents no other appearance than it has done for some time past, being pale-coloured and opaque while the animal is at rest, but after exercise assuming a much darker tint. It does not indicate the presence of any acid. The deposit from it, although still considerable, is not so large as when the hydrochloric acid was first exhibited.

Upon examination it was thought that the calculus had become much rougher on its surface. Let the draught be discontinued, and give a laxative ball, limiting the diet to mashes.

Feb. 3*d*.—The soreness of the mouth has disappeared. In other respects, the symptoms are as last reported. The consent of the owner not having been obtained to perform an operation for the removal of the stone, and being willing to part with the horse, Professor Sewell purchased it, so that the opportunity of seeing the operation performed might not be lost to the pupils. The animal was therefore placed on a low diet, and occasionally a dose of purgative medicine was administered.

Feb. 17*th*.—Mr. Spooner was requested to perform the operation. Before casting the animal, he gave a succinct history of the case,

and the mode of treatment which had been adopted. It was at one time anticipated, he said, that this would have superceded the necessity of having recourse to an operation, from its appearing that the calculus was undergoing solution by the lithontriptic employed; but of late the action of the agent had not been so marked. Probably the outer surface of the concretion being less closely aggregated than its central portion, had yielded, and this would account for the asperities which could plainly be felt. A fair trial, he thought, had been given to the acid, and he believed that we should yet find that some good has been effected from it. His first object would be to try to extract the calculus entire; but should it prove too large—which he apprehended would be the case—it must be crushed, and withdrawn piecemeal.

He strongly objected to cutting through the neck of the bladder, could it by any means be avoided, considering that such was the size of the membranous portion of the urethra that all might be effected without it; while incontinence of urine was very likely to supervene on the bladder being thus wounded.

Mr. Spooner then pointed out on dried preparations the arrangements of the bloodvessels of the parts, noticing the deviations which now and then occur, commenting on the consequences, and how these were to be met; and thus shewing how necessary a knowledge of anatomy is to the veterinary surgeon, and without it how frequently he would be unable to relieve the sufferings of those animals placed under his care.

The horse was now cast by the hobbles, the collar rope at the same time being placed around his neck, so that, when down and turned upon his back, the ends of the rope were passed through the rings of the hind hobbles and thence brought forward through the rings of the collar, by which means the hind legs were drawn towards the fore quarters, and firmly secured. Thus the parts to be operated upon were freely exposed. The assistant now passed a whalebone staff up the urethra as far as the perineum; which when felt by Mr. Spooner was immediately cut down upon with a small pocket scalpel, making an incision so as to admit of the introduction of the index finger of the left hand into the pelvic portion of the urethra. Using this as a director, with a probe-pointed bistoury he laid open the canal to the extent of two or three inches, in a direct line with the rectum. The lithotomy forceps were at once passed into the bladder, and, by the aid of the right hand in the rectum, the calculus was readily grasped. On attempting its withdrawal, the anticipations of Mr. Spooner were realized: it proved too large to be extracted whole. He therefore was necessitated to exert considerable mechanical force so as to destroy the integrity of the stone, in doing which the body

of the calculus several times escaped from the forceps leaving many fragments which were easily extracted. The body being still too large, and very hard, the crusher used by the human practitioner was tried, but its arms could not be extended so as to embrace the concretion. The forceps were therefore again had recourse to, and portions of the stone broken off from its edges, until it was reduced sufficiently small, when being once more firmly seized, on the exertion of moderate force, it was withdrawn.

The bladder was injected with tepid water, and, by means of Read's syringe, a continuous stream was kept up for some minutes, during which process the small particles of the calculus which remained were washed away by the return of the water. By the hand being passed up the rectum, and the two sides of the bladder brought in apposition by pressure, this viscus could be felt free from any calcareous deposit. The edges of the wound were now brought together by two interrupted sutures, and the animal liberated.

Owing to the many fragments into which the calculus had been broken, the time occupied in the operation was much protracted. It extended to thirty-three minutes; but the animal seemed to suffer comparatively little during it.

As soon as liberated he was removed to a spacious loose box, and on examination of the pulse it was found to be 86. Quietude was enjoined, and he was made comfortable, the body being clothed, the legs bandaged, &c. and a warm mash placed before him.

One hour after the operation the pulse had fallen to 48 beats in the minute, and its tone was somewhat full, while occasional efforts to void urine were made, and the respiration was a little hurried.

Six hours afterwards, the pulse had risen to 54, and was irritable. The animal, however, had eaten his mash, and appeared lively; nevertheless, to guard against any unpleasant consequences, and to prevent the access of inflammatory action, blood was abstracted from the jugular vein to the amount of 8lb, and aloes 3v, administered in the form of ball. The animal was then left for the night, directions being given that, from time to time, the groom in attendance should see that no accident occurred.

Feb. 18*th.*—During the night the animal has lain down frequently, manifesting slight uneasiness. By rubbing the neck, the pin became dislodged, and a little blood escaped; the orifice was, however, again quickly closed by the attendant. A small quantity of blood has also flowed from the wound in the perineum, but it cannot have exceeded two or three ounces.

This morning the animal was seen to urinate. The penis was drawn, no pain was experienced, and the secretion flowed by the

natural channel, not a drop escaping by the wound. In quantity it was about half a pint, of a pale colour, and affording no deposit. The pulse has become more quickened, being 96, and its tone irritable; the tongue is also coated, but the mucous tissues are not injected, and the respiration is tranquil. No swelling about the perineum has taken place, and the animal is lively.

It having been thought that the sutures created some irritation they were removed, and the parts lightly fomented with tepid water. As the bowels had not been acted upon by the aloes, an enema was directed to be thrown up, and repeated if found necessary. A desire for food being evinced, mashes were allowed.

Feb. 19*th.*—In the afternoon of yesterday the pulse had fallen to 56, and the bowels were responding freely to the aloes. This morning the pulse is a little more accelerated, being 60, its tone feeble; the animal, however, has fed well on mashes, and is lively; the tongue is not so much coated, and the breathing continues natural. He has been observed to pass his urine in larger quantities, and by the natural conduit. No swelling has taken place around the wound, but a thin sanies is emitted from it. The bowels continue in a relaxed state. Let the diet continue the same, and keep the parts clean.

Feb. 20*th.*—Pulse 56, tone improved. The suppurative inflammation has been set up in the wound, pus being mixed with the serous secretion. It has a favourable appearance, and no swelling around it has taken place. The animal continues lively, and his appetite is still good. The urine is passed freely, and it is both natural in quantity and quality. The fæces are pultaceous. Allowed sliced carrots with mashes. Keep the parts clean, as before ordered.

Feb. 21*st.*—The pulse is 50, and its tone continues to improve. This increase of the heart's action appears, in a great measure, to be dependent upon the nervousness of the animal. When approached he trembles, as if fearful that something was about to be done to him. The respiration remains unaffected, the mucous tissues retain their healthy tint, the tongue has become clean, the appetite continues good, the animal lively, and the alvine evacuations soft from the diet. He urinates freely, and lies down during the night. The wound retains its favourable appearance, and the pus discharged from it has increased in quantity, and is laudable. Treatment as before ordered.

Feb. 22*d.*—Pulse 45, its tone becoming natural, and otherwise no unfavourable symptom remains present. The wound suppurates freely, the animal is lively, the excretions natural, and his general health is apparently good.

It is now the fifth day since the operation, and no urgent symp-

tom has shewn itself. The little constitutional disturbance which at first was observed might have been anticipated; a successful issue may therefore be confidently hoped for. The diet may now consist of bruised corn with mashes and carrots, and let the wound be kept clean.

Feb. 24*th.*—Seven days since the operation was performed, and no doubt now exists as to the favourable termination of the case.

THE CALCULUS was of an ovoid form, flattened, and its surface much roughened. It weighed 4¾ ounces troy. A fragment subjected to the influence of heat by means of the blow pipe first became black and then whitened. In hydrochloric acid it underwent solution with effervescence. By boiling in caustic potassa it yielded no ammonia, neither did nitric acid afford any trace of uric acid.

Twenty-five grains, exposed for some time to a white heat in a Wedgwood ware capsule, by which the animal matter was consumed and the carbonic acid dissipated, left thirteen grains of an alkaline earthy residuum. This dissolved in hydrochloric acid without any effervescence, proving that the carbonic acid had been disengaged by the heat. The solution being filtered, it was divided into two equal portions.

To one portion water of ammonia was added to neutralization, and, to this, a solution of the phosphate of soda and ammonia, which, on being heated, threw down a precipitate of the ammoniaco-magnesian phosphate, amounting to 1.5 grains. This being separated by means of a filter, on the addition of oxalate of ammonia to the remaining solution, an abundant precipitate of the oxalate of lime was obtained, amounting to nearly fourteen grains: actually 13.77 grains.

To the other portion a solution of the acetate of lead was added, for the purpose of detecting phosphoric acid; but no turbescence whatever took place, consequently there is an absence of this acid and of the earthy phosphates.

Fearing that some error might have taken place, another mode of analysis was adopted. A few grains of the calculus were deprived of almost all the animal matter by the aid of the blow-pipe, and the earthy residue dissolved in dilute hydrochloric acid, when a considerable disengagement of carbonic acid gas took place. The solution being filtered, water of ammonia was added to it, when a slight cloudiness ensued, arising from the presence of very minute flocculi; but no gelatination, as is seen when the earthy phosphates are present, constituting the bone-earth calculus.

The inference deducible from these analyses, in which I have been kindly assisted by Mr. Hughes, is, that the composition of

the calculus is carbonate of lime and magnesia, with animal matter; or, to give the proportions in one hundred parts,

Animal matter	11.55
Carbonate of lime	86.12
Carbonate of magnesia	2.33
	100

The questions which now almost naturally suggest themselves, are these:—The friable nature of the concretion having been ascertained—and in all the calculi which I have examined carbonate of lime forming the largest constituent—cannot some mechanical means be employed by which such an accumulation may be with certainty crushed?

Had the hydrochloric acid any action upon the calculus? Its composition being shewn, it admits of no doubt but that out of the body it is almost a perfect solvent for it. Would not some other means of introduction be thus pointed out? What objection can there be to the injection of this agent, in a dilute state, into the bladder? It has been ascertained by Sir B. Brodie, that dilute nitric acid injected into that viscus, instead of exciting, allays inflammatory action; and Fourcroy succeeded in dissolving a large quantity of sabulous matter in the bladder of a horse by injecting vinegar into it.

For my own part, although unable to detect the presence of an acid in the urine of this patient, I am inclined to think that it tended to destroy the aggregation of the mass. Mineral acids are well known not to undergo assimilation; hence the employment of them as astringents, and for the purpose of staying internal hemorrhages. It is true, they become largely diluted by the blood; but then the kidneys are the emunctories by which they are expelled from out the system. I must not, however, enlarge here, as the present forms the subject of the Prize Essay for Practitioners, by whom I have no doubt it will be treated as it deserves to be.

I am, Gentlemen, your faithful servant,

W. J. T. MORTON.

The following communication on the prevailing Epizootic among Cattle was then read:—

Hoping that these few lines, descriptive of an epizootic among cattle, which came under my immediate notice within this last month, may not be unworthy of the Association's acceptance, and that they will attribute my intrusion to the right motive, namely, a desire to bring about that object common to us all, the diffusion of

practical facts among the members of our profession, I venture to present myself before the Veterinary Medical Association.

Mr. Carsonman, cow-keeper at Hampstead, requested me to come and see some of his cattle that were unwell. On my arrival, I found twenty-one cows and a bull in the byre, twelve of which and the bull were affected as follows:—

They had ulcers upon the dorsum and tip of the tongue, and small pustules upon the skin covering the nasal bones, and a tenderness in the feet, arising from inflammation of the "ball" of the heel of each digit. They could not eat, although their appetite evidently remained. The saliva was dribbling from their mouths, so as to saturate the hay that was before them. In none of them could I detect any fœtid smell from the mouth,—the fæces were natural,—no typhoïd or febrile symptoms,—the milk was much diminished in quantity, and deteriorated in quality.

These had been labouring under the disease for a week or more. The remaining five out of the twelve, and the bull, were attacked the day previous to my seeing them. They had large blisters upon their tongue, containing a transparent serous fluid, tenderness on their feet, inability to eat, no febrile symptoms, no pustules upon the nose.

Mr. Carsonman told me that four out of the nine that were now well had the disease a fortnight previous, and that the remaining five were not attacked this season, but had the disease last November, when it was among the cattle, these five being the only part remaining of his last year's stock. He said that the disease lasted from ten days to a fortnight, and that during this time he suffered much from the scanty supply of milk. His treatment of those that had recovered, and of those that are first mentioned in this letter, was bleeding and purgatives, but no local application to the mouth; under which treatment, as I said before, they all recovered. Therefore his object in asking me to see them was, not to prescribe for their recovery, but to tell him, if possible, of some medicine that would increase the supply of milk during the existence of the disease. Feeling assured from the symptoms which existed that the scanty supply of milk depended more upon his maltreatment of the cases than the actual disease itself, I requested him to desist from bleeding, and content himself with a dose of salts, together with breaking the blisters upon the tongue on their first appearance, and washing the mouth two or three times per diem with a solution of alum, so as to prevent the sores from running on to ulceration, which they did when allowed to burst of themselves. From the circumstance, as I imagine, of the membranous covering of the tongue being so thick, thereby retaining the fluid for a long period, and which therefore necessarily acted as an irritant, and disposed the

sublatent parts to ulcerate. In consequence, also, of this ulceration, the animal must be a much longer time unable to eat, and this, together with the unnecessary bleeding, tended very much, in my opinion, to diminish the supply of milk. This I had the opportunity of proving was the case; for the five that were treated according to my orders recovered after the third day, and so also did others that were affected in the same way in a neighbouring dairy.

I am at a loss to determine the cause of this disease, and whether to call it blain or common aphtha. If it is blain, it is only in a modified degree, inasmuch as it does not take on a typhoïd character; this perhaps depending upon the exciting cause of the disease (whatever it may be) being very feeble. If its proper title is aphtha, it differs from the disease commonly known by that term, inasmuch as the feet are not affected, and it does not take on an epizootic character. However, perhaps, if some of the members of the Association should have occasion to attend cases of a similar nature in the course of a few days, they will find the symptoms severer; if so, perhaps the dairyman's practice will be found most successful; all, however, depending upon symptoms. Strangely variable are the symptoms of the same disease in different subjects, and consequently as variable must your treatment be. And here I may recommend the tyro in cattle practice to discard from his mind all those notions of specific treatment of diseases in cattle which we find most writers upon this branch of the profession (excepting Youatt) abounding in; and, in fact, most practitioners of the day. It partakes too much of empiricism, and tells the world too plainly that the majority of veterinarians too imperfectly understand their practice. I am, &c.

EDWD. DYCER.

MARCH 3, 1840.

The President in the chair.

Mr. Simmonds was elected a member.

The following communication from Mr. Read, on the improved formula of his BLISTER OINTMENT, was then read:—

Crediton,
February 21, 1840.

Dear Sir,—Well knowing the zeal you have for the furtherance of any improvement in our common cause, viz. the advancement of veterinary knowledge, I beg to acquaint you that I have for many years past added to the common blistering ointment, according to the manual in your valuable pharmacopœia, 2 oz. of the potass.

hydriod. to 2℔ of the ointment, and I find that it has a most beneficial effect, adding to the action of the blister, in all cases where blistering is required, and producing absorption where depositions have taken place much quicker than we could formerly accomplish it.

I have found also the following, viz.

Iodini.
Potassæ Hydriodatis aa ʒj,—misce bene, deinde adde axungii porcini uncias duas; tere simul,

to be an excellent application for those lymphatic tumours that are produced in colts from increased nutrition, and from being forced, without sufficient strength for the task, to run as two-year-olds. This frequently happens to the colts belonging to S. Wreyford, Esq., of racing celebrity; but the iodine never fails of very soon producing the absorption of these tumours. When about ʒj or ʒij are rubbed in for a few days, vesication, attended with a considerable secretion follows. The hair rarely falls off.

It is also a good application for the same kind of tumours in sheep, arising from their being required to be of an extraordinary size by a certain time, when they are all fed on food highly nutritious, and these enlargements are the consequence.

Your's truly,

ROB. READ, V.S.

Crediton, Devon.

To Mr. Morton,
Veterinary College, London.

The discussion on Mr. CARTWRIGHT'S thesis was resumed.

In reply to the questions propounded to him by Mr. Cook, on the last evening of meeting, Mr. Cartwright said, they constituted the most difficult part of his subject, and, perhaps, he should be found unable to grapple with them and satisfactorily to account for the phenomena. It would be, perhaps, as well first to arrive at a clear knowledge, whether the inflammation of the vein did invariably extend upwards, and to what extent? also whether any coagulation of the blood did take place above? If, however, coagulation did take place, it surely did not follow as a necessary consequence that inflammation must supervene. May not the blood become organized and united to the vein, and ultimately feel like a cord under the finger? At other times, if coagulation took place, it acts the part of a foreign agent, from undergoing some unknown change, and then inflammation in the vein is set up, and abscesses form. He could not see the reason why healthy blood retained within a vein should produce inflammation in its coats. It is the opinion of Mr. Percivall that the blood is not the exciting cause of inflammation in the vein, but it directs the course of it upwards. In reply to a question, he said he had not seen a case of inflammation of the saphena vein, and that he was inclined to think that the quantity of blood retained above would be very small; and if any obstruction should take place, it would, he thought, be overcome by the action of the muscles and the pressure of the atmosphere.

Mr. Hubbick remembered seeing a case of inflammation of the jugular vein, in which the disease proceeded downwards. Similar effects he had observed to follow the injection of caustic solutions for the purpose of causing a sloughing of veins.

Mr. Mackinder corroborated this statement, he having known the introduction of the bichloride of mercury and sulphuric acid cause very extensive inflammation, which, however, he thought only affected the connecting cellular tissue. The inflammation extended for several inches in the course of the vein, and both above and below the orifice whence blood was withdrawn.

Mr. Charles.—Does Mr. Cartwright attribute the obstruction of the circulation of the blood in the jugular to the coagulation of a portion of this fluid? If so, he differed with him. He confessed himself at a loss to account for the first step in the process. The coagulum is the effect, not the cause of the obstruction. It never, in his opinion, became organized; if it did, it would be a deviation from the usual laws of Nature, by which she subjects all organized matter that dies to decomposition, and purges it of its impurities. He could not consider the closing of the tube as mechanical, but produced by an effusion of lymph, the process set up by Nature to restore lost parts and to create new matter where disease had rendered the structure unfit to perform its usual functions.

Mr. Wills, in his examination of the state of the veins which have been inflamed, had always found their coats to be much thickened, the result of inflammatory action; and by this means the calibre had been diminished, or the opening altogether closed.

Mr. Sibbald considered inflammation of the vein essentially to consist in a diseased state of the capillaries of its vessels—the *vasa vasorum*. The cause may be occult, or at least with difficulty ascertained. This appears from the circumstance of repeated failures having taken place in our endeavours to excite inflammation of the vein, so as to arrive at its cause. He thought it more than probable that the lips of the wound made in the neck take on the suppurative inflammation instead of the adhesive; the cellular tissue underneath and the surrounding parts sympathize, and at length the vein becomes involved. The result of this is a pouring out of lymph into the interior of the vein, by which it is rendered impervious. Abscesses subsequently form in the surrounding cellular substance, and a sloughing of the parts takes place. In some cases an abscess makes its appearance, perhaps an inch above the original seat of disease. Now, it has been asked, why abscesses should thus form? Have the valves in the interior of the vein any thing to do with it? It would appear very probable that they have—bearing in mind that it is the tissues of the vein which are the seat of the disease, and that the valves are formed by the innermost of these tissues.

The question, why inflammation should extend towards the head, is not, perhaps, so easily answered; but it will be obvious that the part immediately below the obliteration cannot be subjected to the irritation which the part above must suffer from the blood being unable to find a passage along its usual conduit. He should therefore, be inclined to attribute it to that cause.

Very different plans of treatment had been advocated by members. Some spoke in high commendation of the depletive system, by the aid of fomentations, &c. Others as strongly recommended the use of stimulants, as blisters, &c. For his part, the latter had always been adopted by him, i. e. when he had reason to apprehend that inflammation had really been set up in a vein. If it were merely a thrombus which existed, then occasional fomentation, or the use of cold lotions, might be advantageously had recourse to. He thought the argument without force which held that by the use of blisters we were adding fuel to fire; for it must be remembered, that the first acute inflammatory action has passed away, and the formation of pus has commenced, before

we are called upon to treat the case—the object was to prevent the extension of inflammation by setting up another kind of action in the neighbouring parts, thus diverting the current of the blood, and at the same time transferring the nervous energy. Poultices and fomentations have been said to unload the capillaries, and thus act as depletives; but they also caused the suppurative action to spread—they favoured the formation of pus, and, consequently, he gave the stimulating plan the preference.

In reply to the question, how it was that inflammation did not proceed upwards in the saphena or brachial vein? he said he considered it to depend upon the circumstance, that blood could not be retained in them, so as to act as an irritant.

A Member having expressed a doubt as to inflammation ever taking place either in the brachial or saphena veins, accompanied with any unpleasant consequences,

Mr. Stanley said a case of inflammation of the superficial brachial vein had occurred in his practice, and the vein had sloughed to the extent of some inches.

Mr. Evison and *Mr. Rolfe* adduced similar cases, although the consequences had not been so severe, there being no loss of the vein in those which they had witnessed.

Mr. Simonds remembered one case of inflammation of this vein, which proved very severe, and the cure of which was necessarily protracted. Very frequently he had met with thrombus and subcutaneous abscesses around this vein.

Mr. Cartwright, referring to the case recorded by Mr. Daws and commented on by him, begged to ask if both veins were lost at one time; and if so, how was the blood conveyed from the head? the vertebral veins, he thought, could not, on account of their being within the bones, be sufficiently dilated for this purpose. He remembered seeing in the dissecting room last year, a beautiful preparation of a head belonging to Mr. Markham, now of Heywood, Staffordshire, where on one side was an inflamed jugular vein in which there existed a mass of veins found ramifying the parts, as numerous almost as a ball of hair, and many of them not merely enlarged, but, he should think, newly formed, and which were seen to empty themselves into the jugular by several branches.

Mr. Daws.—Both the veins were not removed at the same time. About a month elapsed between the taking away of the one, and the extirpation of the other. He knew of no other veins than the vertebral by which the blood could be returned, and after the death of the animal he found these to be much enlarged, arising from the increased volume of blood sent through them.

Mr. Cartwright would ask Mr. Sibbald, supposing the superficial brachial or saphena vein was obstructed, and that blood was contained for some inches in the vessel *below* that part, and where there was no anastomosing branch to remove it, why should not inflammation take place there as well as above the part?

Mr. Sibbald could not satisfactorily answer the question.

Mr. Cartwright.—From the case mentioned by Mr. Daws, where the horse had lost both jugulars, and was not any the worse for it, and the late Professor Coleman in the Veterinary Transactions, and Mr. Youatt in his work on "The Horse," having also said that the horse was not the worse for it, and from having seen many horses whom, to all appearance, the loss of a vein had not injured, he would ask Professor Sewell why they, as he had been informed they do, pronounce all horses that are brought to the College that have lost a vein, unsound?

The Patron having been appealed to stated that, very rarely

had he met with inflammation of any other vein than the jugular: he might say, never. A thrombus will sometimes appear, and much surrounding inflammation, and, occasionally, abscesses will form; but these are merely superficial, occurring in the cellular tissue underneath the skin, and never affecting the coats of the vein so as to constitute phlebitis.

As it respects inflammation of the jugular veins, and its consequences, it was unquestionably a subject well worthy of the consideration of the members of the Association. To ascertain the effects likely to supervene, he had tied up both the jugular veins of a horse, and thus caused their obliteration immediately. The animal was kept for several weeks, and then destroyed. Upon examination, the blood was found to have been transmitted by anatomosing branches, forming the most beautiful net-work of vessels conceivable, from above to below the ligatures.

The Patron had seen two cases, instances of the inflammation extending towards the heart as well as towards the head. Sometimes the suppurative action attacks not only the vein, but involves the parotid gland, and has even proceeded to the sinuses of the brain. The gland also enlarging, may, by pressure on the larynx, cause roaring.

In less severe cases of inflammation of the vein, when a coagulum fills up the tube, the best course of procedure is to lay it open, and take this out. If this is not done, there always remains behind much thickening, accompanied with a stiffness of the neck, the result of an organization of the effused lymph. As to the general treatment otherwise, he agreed with the author of the thesis. Stimulants and blisters he did not approve of.

Horses having lost their jugulars are liable to cerebral attacks, as vertigo—called megrims, apoplexy, &c., and are unsafe to turn out to grass. The eye on the side on which the vein has been lost may become amaurotic, and œdematous swelling of the head is likewise apt to take place. There can be no question of animals that have lost these veins being unsound for ever afterwards: at any rate, he always rejected such horses, if warranted sound.

Mr. Erison would ask Mr. Cartwright whether he has ever seen inflammation of the jugular vein in cattle, and if he had, which way the inflammation extended? His reason for asking this question was that he had been led to understand that a cow has two jugular veins, an external and an internal one; and that this is the cause of the disease extending towards the heart. He had seen one case of inflamed vein in a cow; and in that case the disease seemed to have a tendency to extend towards the heart; but, in fact, it extended both ways. He would also ask Mr. Cartwright, whether he was aware that a cow has two jugular veins on each side, and if such is the case, why the disease should extend towards the heart on that account?

Mr. Cartwright.—I have mentioned two cases in my Essay; one extended

into the chest, and produced exfoliation of the ribs; the other extended a considerable way down the neck. He also wished to remark that, in this last case, although the cow was turned out to graze every day, and the vein was severely diseased, there was no swelling about the head or jaws during the cure, which took place in about six weeks, and principally by the insertion of a seton, and caustic dressings. Mr. Youatt has described the existence of two jugular veins in the cow; but such being the case, he is unable to assign a reason why, on that account, disease of the vein should extend towards the heart.

Mr. Rolfe asked whether there were not certain diseases during which the horse was more than usually subject to phlebitis.

Mr. Cartwright replied that, under inflammatory fever, or where there was a general tendency to take on inflammation, the vein would more readily be affected by various exciting causes than under other circumstances.

Mr. Wills.—From what source would Mr. Cartwright obtain the blood if venesection would appear to be required?

Mr. Cartwright would readily bleed from the opposite vein. He does not like the palatine vein. He has found great difficulty in arresting hæmorrhage from this vessel.

Mr. Wills.—That is only where the artery has been wounded

Mr. Cartwright recollected one case in which the horse did not get up for three or four days afterwards, and others in which the debility was carried to a fearful extent in consequence of bleeding.

Mr. Wills asked whether Mr. Cartwright was in the habit of introducing corrosive sublimate into the wound.

Mr. Cartwright was in the frequent habit of dipping small pieces of lint into a solution of it, and then introducing them into the wound. This produced a little sloughing, but it is very rarely that he applies this with any degree of severity.

Mr. Cook.—Does Mr. Cartwright think that carditis might follow?

Mr. Cartwright never saw a case of carditis following phlebitis.

Mr. Wills.—Why does not phlebitis make its appearance more quickly in the horse than it is accustomed to do?

Mr. Cartwright replied, that this was a circumstance for which he was unable satisfactorily to account.

Mr. Wills remarked that, among other reasons, Mr. Cartwright objected to the use of the blister on account of the blemish which it caused by the removal of the hair. He never saw it so disturbed or destroyed as not to grow again. In process of time the temporary blemish nearly or altogether disappeared.

Mr. Evison.—What part of the blood forms the adhesive material by which the wound is closed.

Mr. Cartwright did not trace this exclusively to any particular component part of the blood. There was an effusion of the various substances of which it was composed. The albumen, the fibrine, and the serum were all employed in the production of the adhesive matter by which the wound was closed.

Mr. Hubbick asked what was Mr. Cartwright's opinion of the ligature.

Mr. Cartwright would only have recourse to the ligature in cases of hemorrhage which he could not otherwise arrest. There is always danger of sloughing; but still it is better than letting the horse bleed to death. In the present number of The Veterinarian, March 1840, there is a very interesting and instructive account of the phenomena of inflammation in the jugular vein from the moment of the application of the ligature to the obliteration of the calibre of the vessel. A gentleman spoke of a predisposition

in the jugulars to take on inflammatory action sooner than the other veins. He was not at all aware of this, nor did he believe it. If there was great inflammatory action in the system, the other veins would suffer as well as the jugulars.

Mr. Hughes inquired whether Mr. Cartwright had ever observed the inner coat of the vein? Did it exhibit much appearance of inflammation? Sir Astley Cooper mentions a case of inflammation of the median vein of the arm of one of his patients. There was considerable engorgement of the neighbouring parts, but not the slightest appearance of inflammation in the inner coat of the vein itself.

Mr. Cartwright did not think that there was primarily much inflammation of the vein, but of the parts around. Even when a ligature was applied there is no inflammation of the vein itself, but of the membranes surrounding it. However great may be the engorgement, the vessels are quite pale. In answer to a query, he replied that he bled rather low down in the neck—he finds more muscular substance there than above, and in proportion to this is the quick healing of the incision. It is also the safest part if the horse is compelled to be set to work on the same or the following day. About four or five inches from the angle of the jaw would be the best situation for the operation. He cannot give any reply to the question, whether thick or thin skinned horses are most subject to phlebitis, except that in his own experience he had had more to do with thick than thin-skinned horses. It is the usual practice to bleed on the off side; and every young veterinarian should habituate himself to bleed on that side, not because there is any difference in the structure or course of the veins, but that, from the habit of horsemen to approach the horse on the near side, the bleeding marks and blemishes on the off side are not so likely to be seen. These little things are often of very great consequence, and are not attended to as much as they should.

Mr. Daws.—It is only in peculiar cases that we should have recourse to the ligature, viz. when the edges of the wound cannot be brought into exact opposition, and will not heal by the first intention and when there is occasional or frequent bleeding at feeding time. Some of these cases have occurred to him, and he has had recourse to the ligature, and never with any fatal or even unpleasant result. He would ask, what can be substituted for the ligature?

The President had had recourse to the ligature where the vein had been punctured through. The hemorrhage was immediately arrested, and no bad consequences followed. Sir Astley Cooper and Mr. Lawrence used to be in the constant habit of applying it, and with the greatest success.

Mr. Daws.—The ligature renders the vessel more secure than the application of the potential cautery can ever do, from the fact of the slough sometimes coming away sooner than it was expected to do.

Mr. Wills asked whether it was proper to turn out horses to grass soon after bleeding from the jugular?

Mr. Cartwright did not consider it as prudent; but it was very often done, and without any bad consequences.

The President had known horses turned out to grass soon after bleeding, and there had been evidently some affection of the head, and especially if the jugular vein on the other side had been previously lost. He has also seen swellings of the face, enlargements of the parotid gland, and of the head and neck. It is highly improper to turn out a horse that had lost the jugular vein on one side, and, all circumstances being considered, he did not think it advisable to pass a horse that had lost one of these important vessels.

The following letter is from MR. YOUATT, and is connected with the foregoing debate.

To the Chairman of the Veterinary Medical Association.

Having promised my friend, Mr. Cartwright, that I would, if I saw fair opportunity, mingle in the debate on Inflammation of the Jugular Vein, and being prevented from accomplishing this in the early stage of the discussion by engagements from which I could not extricate myself, and, at a later period, by serious illness, permit me now, although shortly and imperfectly, to endeavour to redeem my pledge.

In common with the other members of the Association, I beg to thank him for the great care which he has bestowed on the composition of his Essay, and the numerous interesting, and, some of them, novel facts which it contains. His peculiar opinions we have a right to discuss, and they were discussed, fully, and fairly, and candidly.

I confess, however, that I feel a little aggrieved by what he states of the internal jugular vein of cattle. I have stated its existence—he tells me that he "could not discover it, and that it is a disputed point among students; and he leaves the question for anatomists to decide." I thank him for telling me, even at this late hour, that there is any dispute about the matter. I shall ever regard those as my choicest friends who warn me of the errors which I may have unintentionally committed. After all, however, ours may be a mere dispute with regard to terms.

That which I call the internal jugular vein in the ox might as properly be termed the occipital vein. It descends from the head in company with the occipital artery, and receives some branches from the cerebrum itself, and from the cerebellum, and then, instead of uniting with the jugular, high up, as do the auricular, the temporal, the parotideal, the submaxillary, and other veins, it receives communications from the thyroïdean and laryngeal veins, and, accompanying the course of the internal carotid artery, it at length unites itself with the external jugular vein near its entrance into the thoracic cavity.

I have never said, I believe, that "*a knowledge* of this additional vein in cattle *will obviate*," *or enable us to obviate* "in a great measure, the danger accruing from obstruction in the external jugulars." I have said just the contrary; namely, that "the smaller or internal jugular is deeply seated, and *no practical advantage can be taken of it.*" It is satisfactory to me that this arrangement of the vessels does lessen the danger, but I am perfectly powerless with regard to it.

The Association is much indebted to Mr. Cartwright for his own observations, and the valuable collection which he has made of the opinions of others respecting that interesting and beautiful subject "the valves of the veins:" that which "first suggested to the mind of Harvey the train of reflexions which led him to the discovery of the real course of the blood in the veins, the arteries, and the heart. This great discovery was one of the earliest fruits of the active and rational spirit of inquiry which was then beginning to awaken the mind from its night of slumber, and to dissipate the darkness that had for so many ages overshadowed the regions of philosophy and science." The history of the valves of the veins is only incidentally connected with the practical question before us—inflammation of those veins—but it is a most interesting subject, and we cannot but feel a pride that a discovery of such vast importance as the circulation of the blood, which has led to nearly all the modern improvements in the medical art, was made by our countryman, whose name will for ever live in the annals of our race, as one of its most distinguished benefactors. Although little practical knowledge that is essentially new can now be derived from the study of the valvular system, yet these associations will always render it a favourite subject with the student, and he, perhaps, may be fortunate enough to solve some of the difficulties which are yet attached to it.

The opening of the jugular vein and the abstraction of blood is, under the superintendence of an able practitioner, one of the most valuable remedies which we possess for the abatement of febrile action. The wound, generally speaking, quickly heals: a portion of albuminous matter is secreted, which readily becomes organized, and the divided edges are reunited: but it occasionally, or too often happens, that this union does not take place, and inflammation ensues. "A slight tumefaction," in the language of Mr. Cartwright, "begins after a day or two to appear around the incision—some sanious matter is seen to ooze from the orifice. The swelling gradually enlarges—the lips of the wound become everted, the horse begins to loathe his food, pus begins to be secreted, and the constitution becomes sympathetically affected."

Here are two questions—both of them difficult to be answered—which demand our most serious consideration—*the cause and the cure*. With regard to the first, the answer would seem to be exceedingly easy. There was some fault in the constitution of the animal, or the manipulation of the operator. We can conceive that, in a very irritable state of the patient, a little fire may kindle a sad flame; in such case there will generally be that about the patient which will plainly enough indicate the danger. It is of essential importance, that this should be most carefully studied, for

the most scientific practitioner may be beaten here. In some cases the apparent natural formation of the clot is nothing but the first period of disease, and to which succeeds a greater or less suppurative action, and that of an unhealthy character, and produced either by the influence of the treatment adopted or by certain conditions of the individual, or certain miasmata, and, among these, the determination of the agent is beyond our power. When disease begins to appear, the pus which is deposited is not always between the vein and the clot, as connected with or influencing one or both of them, but it is in the centre of the clot, exhibiting at first a sanious character, and being at the commencement of the colour of the lees of wine, but soon becoming white and opaque. Sometimes the disease does not go to the formation of pus in the interior of the clot, and then the pus disappears, and after that the clot itself becomes organized, without any thing to announce that there had been any production of pus. Sometimes, also, when phlebitis continues its course, the size of the clot diminishes, and that of the pus increases—the vein becomes distended, and there are little tumours at the points where this accumulation is taking place. Becoming distended, and thinned by that distention, the pus extends itself all around, and to this succeeds an abscess, which may open exteriorly, and in the middle of which it is sometimes difficult to recognize the vein, for it has been destroyed to a greater or less extent. . But this is more a description of the disease than an account of the causes by which it is produced.

A horse or an ox is bled, and three or four days afterwards inflammation of the vein takes place. Was there any fault in the manner in which the operation was performed? Theory would suggest that there might be or was—but experience would shew that this has little or no influence. Mr. Cartwright places this in a strong point of view. He relates some experiments by Mr. Cherry, who attempted to produce the disease by using rusty lancets, and escharotics of various kinds, and several other means of irritation, but in vain. I had once three house pupils under my care. I used to entrust two of them, Messrs. Scruby and Garland, to bleed, and no untoward circumstance ever occurred; but as surely as I sent the third, I had an inflamed vein to take care of, and a good scolding to boot. There is something yet undivulged in the process of healing the vein, or in the circumstances by which that healing is prevented, which we have not yet discovered. If the lips of the wound are not brought into immediate apposition—if a portion of hair has insinuated itself between them, there is no wonder that mischief is the result. We can also believe that atmospheric influence has something to do with the case; but a great deal more than has yet been unfolded in our philosophy remains to be di-

vulged. Atmospheric influence—modes of feeding—modes and degrees of work, exert great power, and the very emanations from a bad case may have much deleterious influence.

Among *the home causes*, too much overlooked, are, the turning out too soon, not preventing the possibility of rubbing the orifice, and the use of various compresses until they are imperiously required.

Of the mode of cure it is difficult or impossible to speak confidently. The part should be carefully examined, and the divided edges brought into immediate apposition. Any hair interposed between the divided edges should be removed—the pin should be withdrawn or not, according to circumstances—the part should be carefully and long fomented, and a dose of physic administered. If after two or three days, and the discharge still remains, the application of the budding-iron not too large or too hot may produce a healthy state of the parts. Even in a later period I should not scruple to use the cautery; and when the wound becomes enlarged and unhealthy, I confess that, in despite of what I have heard from Mr. Cartwright, I should blister more extensively than he is disposed to do.

I have not time to dwell longer on these points; and will conclude by saying, that Mr. Cartwright deserves the highest praise for his introduction of this subject, and the manner in which he has treated it.

MARCH 10, 1840.

Mr. Daws, Vice President, in the Chair.

Mr. Stevenson was elected a Member.

There was laid upon the table the foot of a horse in which phagadenic ulceration had gone on to such an extent that nearly all the horny parts had sloughed. It presented a mass of disease.

The following account of the case was given by the chairman:—

The case which I present to your notice was, originally, one of canker. It had existed for some time, and had been treated—I think I shall not be wrong when I say—by an empiric. I was called in to the case this day week, and I found the foot in rather a worse state than it is now; for then the greater part of the hoof presented an appearance of sloughing, and the foot itself was in a gangrenous condition. I deemed it an act of humanity to advise the destruction of the animal; but unavoidable circumstances requiring it to be kept alive for three or four days afterwards, I re-

commended, as a palliative measure, that the foot should be enveloped in poultices, and an antiseptic lotion—the chloride of lime—applied to it. This accelerated the sloughing process. I subsequently ascertained that the person who had been attending the horse had employed potent caustics, the effect of which is visible in the extensive disease which the foot now presents. I think it will afford us a salutary lesson. It teaches us that caustics should be used with great discrimination. The animal was not destroyed until Saturday last, and the antiseptic lotion has rendered the surface of the foot much clearer than it was on this day week. It is a very unusual case, and one which I thought worthy of introducing to your notice. I have no doubt that if this case had been properly treated in its early stages, it would have terminated in resolution; but from the nature of the applications used there is so much organic destruction that I think the animal never would have recovered. The laminated structure seems, in many places, to be entirely destroyed.

The animal lived after the hoof sloughed from Tuesday until Saturday. When I saw the animal on Tuesday, there was severe constitutional irritation, and I then thought that death would ensue naturally; but the treatment I have mentioned tended to allay irritation and to induce a more healthy action; the appetite returned in a couple of days, and the animal fed well on Saturday; but the case being considered hopeless, he was destroyed.

The following Paper, by Mr. CHARLES WILLS, was then read.

ON THE DEUTO-IODURET OF MERCURY.

Mr. President and Gentlemen,

I cannot help expressing the deep conviction which I feel of my incompetency adequately to discharge the task which I have undertaken; but I should consider myself unworthy of the profession to which I have devoted myself, if I were to keep secret the slightest practical experience, the communication of which may be of service to any of its members; for it is my earnest desire, and should be that of every one connected with the profession, to advance its character and increase its utility. We shall best effect this, and convince the public that our practice is founded on scientific principles, when we communicate to each other the knowledge which we possess, and the result of our experiments and labours.

THE OINTMENT OF THE DEUTO-IODURET OF MERCURY is the

medicinal agent to which I would beg to direct your attention this evening. It is thus obtained—

℞ Deuto-chloruret of mercury..... 70 parts
Ioduret of potassium..... 100 parts.

Place them in separate vessels, and add as much distilled water to each as will cause their solution. Then filter them, and mix them slowly together. Collect the precipitate on a filter, and wash it with distilled water until this comes off tasteless. Then dry and pulverize the precipitate, and put it into a closely-stopped bottle, and keep it for use in a dry and dark place.

THE OINTMENT may be made of different strengths, depending on the nature of the case for which it is applied. I generally use it of the following strength :—

Take of hogs' lard..... ℥i
Deuto-ioduret of mercury..... ℥iss to ℥ij

It is not always necessary to cut away the hair from the part to which it is about to be applied, unless the hair is very long there. It is one of the properties of this unguent to cause a rapid growth of the hair. About two drachms of the ointment will suffice for a space of three inches square, and it does not require so much friction in the application of it as a blister does.

When the ointment is applied the animal's head should be tied up securely for the space of one hour, after which he may be turned loose into the field, and he will neither bite nor rub the part. The cases in which it may be most successfully employed, and the degree of strength in which it may be used, will appear from the following brief history :—

In the first case in which I used it, I little expected the result that ensued. It was a mere experiment on a cart-horse, whose hock-joint was considerably enlarged. I applied the weaker preparation, and on the following morning the part was considerably more swollen, and there was a slight discharge, as from a liquid blister. There were also some vesicles of small size. I repeated the application, and watched whether the animal would bite or rub the part, which I found that he would; and I therefore tied up his head. He continued a little uneasy for about half an hour. In three quarters of an hour I let his head down. The uneasiness was passed away and apparently forgotten, for he did not make the slightest attempt to nibble or rub it. I re-applied the ointment on the following day, and then rubbed a little oil on the part. On the next day I had the hock washed clean, and proceeded to make use of the stronger ointment, and this was continued for three successive days.

I then adopted the same treatment as before. By degrees the

swelling became more and more reduced, and at length entirely subsided, although it had existed half a-year before I took the case in hand. The quantity of hair on the part was also much increased. This determined me to make a more extensive trial of the ointment.

My next case was an enlargement on the supero-posterior part of the ulna, and to which a blister had been applied without much diminution of the tumour. In this case I applied the stronger ointment for about a fortnight, allowing a day occasionally to intervene. In three weeks the enlargement had quite subsided.

I have applied this ointment in cases of splents, curbs, enlarged bursæ, and to broken knees, after the integument or wound had healed but some thickening remained. In all it evidently had a powerful effect in producing absorption and encouraging the growth of hair. I could relate several other cases in which I have used this unguent with equal success. In THE VETERINARIAN of December last other cases are related, in which the same application was resorted to by Mr. Ferguson, veterinary surgeon, of Dublin. I will conclude with two cases which appear to me to possess considerable interest, as deciding the comparative claims of this ointment and cantharides.

A bay gelding was lame from a spavin. The owner, anxious to get the lameness removed without the introduction of a seton, or the use of the actual cautery, each of which would leave a blemish behind, had him blistered twice, but without any apparent relief. He then consented to have the setons introduced—the remedy which I then generally employed in such cases. Before I did this, however, I thought of trying the ointment for a short time, not then anticipating that it would avail much in such a case. In eight days, however, he gradually began to recover from his lameness, and in about a month he was sent home sound.

The next case was that of a mare that had the jugular vein extensively swelled. I was not consulted until a week after the swelling had commenced. The person who bled her had used fomentations, and, subsequently, cold applications. The neighbouring parts were now much indurated, and the tumour extended from about the middle of the neck to the parotid gland. The orifice whence the blood had been abstracted was still open, but there was little discharge from it. This discharge ceased altogether in a few days, and the wound healed up. I then applied the ointment, as in the other cases, for three weeks. At the expiration of this time all swelling had subsided, and she returned to her work.

In comparing the benefits to be derived from the application of this ointment with that usually resulting from a blister, I do not mean to say that it will succeed in every case, but that it is an active stimulant, and powerfully excites the absorbents without

producing many of those effects which are objectionable in blisters. It never removes the hair from the integuments, but excites a speedy growth of it. The animal on whose skin it is applied needs not to be kept standing day after day, and night after night, and it can be more frequently applied than a blister: in fact, I consider that two or three rubbings have fully the effect of one blister in removing abnormal osseous growths.

I will not press farther at present on your valuable time, but shall be ready to answer any question which you may think proper to put to me.

The Secretary said, I perfectly agree with Mr. Wills in one remark—not that I am going to speak of the action of the remedy, for I have never witnessed it—that it is always desirable, when we can, to form our own pharmaceutical compounds. Mr. Wills has assigned two valid reasons for it: first, that we may be sure of the quality of the agent; and, secondly, on the score of gain. But he very wisely appends to the latter remark, that gain will always to a scientific man be a secondary consideration. All, however, must be aware that there are many compounds, not generally employed, for which the seller demands a high price. Indeed, the very circumstance of the consumption being small requires that his profits should be commensurately large. This compound is easily made, and the formula given us by Mr. Wills is very correct. It makes a very beautiful chemical compound. I have formed a little in order that the members may have an opportunity of seeing it. It is not a remedy employed in this institution; but I have not doubt that it will be generally used in veterinary practice, and, probably, from the remarks made this evening, the institution will be induced to adopt it. May I ask what Mr. Wills was in the habit of giving for it.

Mr. Wills.—Four shillings and sixpence for an ounce.

Mr. Morton.—This may be made very well for about eight pence per ounce. I mean, of course, taking the articles at the price at which they are purchased from the druggist, and allowing him a fair profit. I am glad that Mr. Wills has introduced this subject to our notice, for the importance of veterinary surgeons making up their own pharmaceutical compounds has been with me a favourite topic.

Mr. Hare.—Mr. Wills has mentioned in one of the cases appended to your Essay that the tumour was slightly diminished by the application of a blister, and that by repeated applications of the ointment it was entirely reduced. Does he not think that it might have been equally well reduced by blisters?

Mr. Wills.—I think it would have taken a much longer time. We cannot apply a second blister in less than a fortnight after the irritation caused by the first subsides; and here in the course of a fortnight, or a little more, the tumour had entirely disappeared. It must also be borne in mind, that these

tumours, when treated by blisters, are very obstinate. It was an indurated tumour arising, as the generality of these cases do, from the part affected being struck with the shoe of the opposite foot. One blister had been applied before recourse was had to the ointment. I should think that ten days or a fortnight had intervened between the application of the blister and the ointment, and in about three weeks after using the latter it was completely removed.

Mr. Cartwright.—I am almost inclined to think that the reduction of the tumour was effected by the blister, independently of the ointment. It is some time after the application of a blister before absorption takes place. It is not at all improbable that the absorption was attributable to the blister.

Mr. Wills.—Possibly that might have been the case; but I think it would have remained a much longer time had it been treated by blisters only. As I have already remarked, these tumours are very obstinate—at least, I have found them so. I thought that, ten days having elapsed after the application of the blister, and the tumour not being much reduced, it was a suitable case in which to try the effect of the ointment.

Mr. Cartwright.—It would have just been the very time when I should have expected the benefit to arise from the blister. My observation merely goes to this—that I think the absorption might have been produced by the blister independently of the ointment.

Mr. Hare.—How long does the ointment take to produce its effects?

Mr. Wills.—I do not apply it until the acute inflammation has subsided, and then I should say a week or ten days.

Mr. Hubbick.—Did the ointment cause vesication? and was there any serum effused?

Mr. Wills.—Not much. There are numerous small vesicles, but they do not rise to any height. They also seem to break rather quicker than when a blister is applied. The first application causes a good deal of swelling, but not the subsequent ones.

Mr. Cartwright.—You have just stated that vesication takes place;—now, where this occurs, and you rub on the ointment three successive days, we should almost expect that the hair would be removed.

Mr. Wills.—No; it is not removed, but increased, both in thickness and length.

Mr. Hughes.—I beg to state that the deut ioduret of mercury is formed very quickly by triturating together two equivalents of iodine and one of mercury, adding a little spirit of wine to favour their combination. The only difference is, that the compound before you contains a little water. This is the simplest mode of preparing it, and in drying there is no waste. I have seen it used in scirrhous tumours in the human subject, and it has been assisted in its action by the internal exhibition of the proto-ioduret of mercury, which may be made by triturating together an equivalent of iodine and mercury. I beg to suggest whether it would not be advantageous to administer iodine internally while this ointment is being applied externally.

Mr. Cartwright.—Mr. Wills has stated that he is not accustomed to cut the hair off, and he rubs the ointment in for three successive days. Does he not think that a single application with the hair cut off would be as effectual as its continuance for three days with the hair not removed?

Mr. Wills.—No, because every day there is a fresh discharge. A sort of scurf comes away.

Mr. Cartwright.—Is there not danger, by these repeated applications, of sloughing of the integuments?

Mr. Wills.—I have never witnessed it.

Mr. Cartwright.—In some applications of the hydriodate of potassa which

I have rubbed in myself though, of course, it would depend on the strength of the ointment—I have seen sloughing result from it.

Mr. Dunn.—For what bursal enlargements has Mr. Wills used it? and has it caused their reduction?

Mr. Wills.—The pastern and hock: in the latter, for an enlarged bursa in the front of the joint, of which it has caused evident diminution.

Mr. Dunn.—Does he not think that, from the strong stimulating property which this compound possesses, it must decrease the quantity of synovia in various parts of the body?

Mr. Wills.—I have never found any stiffness of the joints indicating the reduction of synovia.

Mr. Croxford.—Has he employed it in exostosis?

Mr. Wills.—I have frequently used it in the case of splints, and always found it successful.

The Secretary.—In the case of spavin adverted to by Mr. Wills, was there absolutely a bony enlargement of the joint? and, did an absorption of the bony deposit take place?

Mr. Wills.—Yes; and in about three months the exostosis had completely subsided. I have no doubt that the cure was effected by the ointment: three weeks had passed since the last blister was applied, so that it could have had no effect.

The Secretary.—I confess that I have long been sceptical as to the power of this or any other compound of iodine over a bony tumour, except the deposit is very recent. In that case I can conceive of its acting so powerfully on the absorbents as to cause them to take up the bony matter. But when the bone has become perfectly organized, and thus forms a part and parcel of the animal, I have questioned the possibility of even this compound of iodine and mercury effecting its absorption. Still, however, startling facts do now and then arise; and there is a remarkable illustration which Mr. Wardle can give us in reference to a grey horse which he was in the habit of riding some time since.

Mr. Wardle.—It was a three-year-old colt with an enlargement on the near fore leg. It did not at all interfere with his action. It was a complete exostosis. The tumour had been blistered several times, and three setons passed over it, but without any beneficial result. We applied the hydriodate of potassa for a length of time, but it did not appear to reduce it. The owner then sent the colt to our infirmary, and we applied the hydriodate of potassa in junction with mercurial ointment for six weeks, and then discontinued it. The part is now apparently well, all the swelling having entirely disappeared. My father intends sending him to the College for the inspection of the members of the Association, as soon as the owner has taken him up from grass.

The Chairman.—I saw the horse yesterday at the owner's house, and the reduction of the ossific deposit has been very considerable. Mr. Hughes suggested, a short time ago, the internal administration of some of the compounds of iodine. I know that Mr. Wardle exhibits them until the system becomes affected. Two or three cases are recorded by him in THE VETERINARIAN for November or December last.

The Secretary.—It is a very general opinion among human practitioners, and I cannot see why it should not obtain in veterinary practice, that the more quickly you charge the system with iodine, the more surely will you effect the reduction of abnormal growths.

Mr. Evison.—Does Mr. Wills consider that the preparation acts on the absorbents merely, or also as a counter-irritant?

Mr. Wills.—I think it acts principally upon the absorbents.

Mr. Evison.—I have seen several cases where iodine has been employed in curbs and bursal enlargements with considerable benefit: we always added a portion of corrosive sublimate to the iodine, by which the same compound is formed as that advocated by Mr. Wills.

Mr. Hare.—I have employed iodine ointment, and never met with any good resulting from it. After that has been applied three or four times, I have used the blister ointment, and it has eradicated the disease.

Mr. Dunn thought it necessary to apply it for three or four weeks, and once or twice a-day.

Mr. Mackinder.—I know of no agent which has been introduced that has not had many opponents when it was first proposed; but I feel assured, by what has fallen from several gentlemen, that this compound will prove of great service in veterinary practice. By using mercurial ointment for several days, and afterwards applying the iodine ointment, I have seen decided good effected; I think equally as great as by applying both together.

Mr. Greaves.—Would Mr. Wills prefer this ointment to the application of a blister for the purpose of maturating an abscess?

Mr. Wills.—Certainly not. I think the ointment, by rousing the action of the absorbents, would tend to remove the deposit rather than favour suppuration.

Mr. Hare.—Has he not seen a blister remove an abnormal growth?

Mr. Wills.—I have, in many cases; but the great advantage of applying this ointment is that you neither keep the horse standing, nor incur danger if it is necessary that he should be worked during the time you are treating him.

Mr. Dunn.—Has he had an opportunity of examining a case of spavin, where he has employed this ointment, after death?

Mr. Wills.—I have not.

Mr. Cartwright.—Mr. Wills has stated that, when this ointment is applied, there is no danger of the animal biting himself.

Mr. Wills.—Not after the lapse of an hour. I have watched that particularly in more cases than one.

Mr. Cartwright.—I am rather dubious on that point. Wherever an application produces vesication, there is always danger of the horse biting the part. We continually see blister ointments puffed in the newspapers, with the assurance that we need not be afraid of loosening the animal after their employment. I think it is not prudent whenever vesication has been produced, whether by that blister ointment, or even by this compound, to let the animal loose.

Mr. Wills.—That must be left to the practitioner's pleasure; but I am assured, from experience, that it may be done with impunity.

Mr. Daws.—I am in the habit of blistering with a preparation which our Secretary recommends in his Manual of Veterinary Pharmacy, and it is seldom that I tie animals up. Although they are turned loose for days, and sometimes weeks, in boxes, and the application is repeated, it is very unusual to see a disposition to gnaw the legs, or even rub them. I think this is, in a great measure, owing to the absence of those violent irritants employed in the ointments made by druggists. If you simply combine the active principle of cantharides with lard, there is no danger of the horse blemishing himself.

Mr. Cartwright.—Mr. Daws's practice and mine differ widely. I have frequently seen a horse bite his knees, and in several cases he has been sadly blemished; I have also heard of many similar cases. Of course, every one will please himself as to the plan he pursues; but I must say that I do not approve of the animal being loose.

Mr. Daws.—I think that, in the cases alluded to by Mr. Cartwright, there must have been something wrong in the preparation of the blister ointment.

I have applied as many blisters as most men of my age, and I have never met with a blemish arising from the compound to which I have before alluded. I can speak of it with great confidence.

Mr. Morgan.—Of what does Mr. Cartwright's blister consist? and how long does he find it necessary to keep the horse tied up?

Mr. Cartwright.—Powdered flies combined with lard, and generally two or three days are suffered to elapse before I venture to loosen the horse.

Mr. Morgan.—I have seen many horses blistered, and I have blistered many myself; but I never saw any necessity to tie them up for more than twenty-four hours.

Mr. Cartwright.—There is as much danger when vesication has taken place, and even a pretty free discharge excited, and as much occasion to keep the animal tied up then as during the first forty-eight hours.

Mr. Greaves.—I should think it sufficient to tie him up for twenty-four hours; longer than that I deem quite unnecessary.

Mr. Fisher.—When we were in the habit of applying the ordinary blister ointment we were obliged to tie up the animal for three or four days: I therefore think, that, if the ointment recommended by Mr. Wills possesses the advantages which he ascribes to it, it is a very valuable agent, both in the pharmacy of the veterinary surgeon and in the stables of horse-dealers. There are many cases in which horses throw out splints or ringbones, in which the owners do not like to have the hair taken off or a blister applied; and if this ointment produces an absorption of the bony matter as quickly as a blister would effect it, it must be a great acquisition.

Mr. Clegg.—I think it is the presence of turpentine and sulphuric acid that is the cause of the irritation which induces the horse to gnaw the part. I have used such a preparation, and in those instances I have been obliged to keep the horse tied up for a considerable length of time: but when I have employed cantharides and lard only, I have never observed the least disposition to gnaw the leg.

Mr. Hare.—I have known an ointment, of which euphorbium was one of the constituents, cause so much irritation as to render it necessary to tie the animal up.

Mr. Cartwright.—I have seen sloughing of the integuments follow that application. I have used the hydriodate of potassa in several cases of enlargement of the neck caused by inflammation of the jugular vein, and apparently with good effect. I have also employed it in cases of chronic disease of the udder of the cow, and then I have exhibited internally eight or ten grains of hydriodate of potassa, night and morning, while the ointment was rubbed in externally. It produced a great deal of irritation, and wherever the ointment extended the udder sloughed. I have also had recourse to it in some cases of splints, but stronger than it is generally recommended. I have used two drachms of the salt to one ounce of lard, with great advantage. I have not, however, employed it so extensively as I intend to do in future.

Mr. Mackinder.—In what disease of the udder has Mr. Cartwright used it?

Mr. Cartwright.—In common garget of long standing: unfortunately, if the cow has any flesh on her bones, she is generally disposed of without allowing time to see what would be the ultimate effect of the application.

Mr. Wills.—I have frequently used it previously to trying the ointment, in the cases related in my paper, but have not witnessed any sloughing induced by it; on the contrary, I have derived great benefit from it in many cases. I have never seen any blemishes resulting from the application of it.

Mr. Cartwright.—I do not mean to say that it is always the case, but sloughing has occurred now and then. The ointment was composed of a drachm to an ounce of lard. I have rubbed in, perhaps, a couple of drachms daily,

until sufficient irritation was produced. I did not continue it after irritation was produced on the skin, but allowed the irritation to subside.

Mr. Brown.—Mr. Cartwright has spoken of exhibiting eight or ten grains of the salt internally: do you consider that a large dose?

Mr. Cartwright.—I am not competent to give an opinion on that subject. I have administered eight grains night and morning for about three weeks, so as to affect the constitution.

Mr. Brown.—I have seen as much as a drachm and a half and two drachms given daily.

The Secretary.—I think it must be allowed that Mr. Wills' anticipations have been in some measure gratified, inasmuch as very many useful remarks have been elicited. I have listened with pleasure and profit—mingled, however, with some degree of surprise—to the observations made. I am at a loss to account for the sloughing process to which Mr. Cartwright has referred, never having seen it follow from the judicious employment of any of the compounds of iodine. We have a little vesication, and then a desquamation of the cuticle, which is a desirable action; but the hair is very seldom removed to any amount, unless there has been an improper application of the agent. Should this be the case, then it is probable that the cutis may become affected, and the hair will be dislodged. If the loss of the hair merely results from the ordinary action of the compound, there is nothing to be apprehended, for it will readily grow again.

Mr. Mackinder's remark is a very just one,—that no new medicine is ever introduced without meeting with many opponents. The very opposition, however, is often the principal means of bringing it into notoriety. Some will even employ it with the view of condemning it; but, in the course of their experiments, they are convinced of its utility, and it becomes with them a favourite remedy. Thus one after another is induced to employ the new agent. It must also be remembered, that there are but few of us who like boldly to risk our reputation by the employment of a new compound, nor is it prudent to do so.

With respect to the internal administration of iodine in junction with its external application, I cordially agree with the remarks which have fallen from various members: but I would make one comment respecting the agent to be employed; the best is, the iodide of potassium. I think iodine, as an elementary substance, should rarely, if ever, be given internally, because it never enters the system in the form of iodine, but of hydriodic acid, which is formed by its combining with hydrogen in the alimentary canal. We should endeavour to avail ourselves of the judicious combination of medicinal agents, particularly of such whose action is similar, for by so doing we obtain much greater effect than when each is alone exhibited. In the present instance, we unite two agents, namely, iodine and mercury, the action of which on

the absorbents is powerful. If we wade through the whole class of therapeutic agents, we shall not find two which produce action in precisely the same way. The gentleman who spoke last adverted to the employment of large doses of the hydriodate of potassa. It is true that he may have given such large doses without seeing any injurious effects follow, but it is not prudent to administer them; for we hardly know what we are about, and very serious consequences may supervene at a time when we little expect them. Many agents which I could name are only beneficial after they have been long and perseveringly employed in small quantities, so as gradually to charge the system, and then produce their peculiar action. By such means we rouse the dormant parts, and bring about health.

A digression has taken place in reference to blisters. Blisters are valuable agents in the hands of scientific men, and they have oftentimes wrought almost wonders. But they are frequently abused, and the comments which have been made on blistering compounds are many of them very just. I think that practitioners are now pretty well aware of the inutility, not to say the evil, which results from the employment of various irritants. There is no compound so good as the simple ointment made by combining cantharides with lard; or, that which is my favourite compound, the *oil of cantharides* made by digesting powdered cantharides in olive oil. In this you have the active principle of the fly, and not that amount of irritation produced which is always the case with an ordinary blister. Turpentine, sulphuric acid, and euphorbium, added to blisters, only create irritation without vesication: I, of course, speak of small quantities being added to the blistering agent. The great good arising from blisters is, that they produce a revulsion of action. They also cause effusion of a sero-albuminous fluid between the cutis vera and the cuticle; and thus they bring about a healthy condition in deeper-seated parts, acting often both as depletents and counter-irritants.

I trust the introduction of this incidental Essay by Mr. Wills upon a certain medicinal agent will induce other members to follow so good an example.

Mr. Hughes.—It has been generally found by the profession that small doses of iodine are more successfully employed than large ones. Large doses not only affect morbid deposits, but cause an absorption of the glands. In the male they have been frequently known to occasion impotence, by an absorption of the testes; and in the female, by removing the ovaries. It is the present practice to exhibit small doses frequently, and gradually to increase them.

Mr. Erison.—Mr. Cartwright stated that he had seen iodine used in chronic inflammation of the udder. I have seen it employed in many cases, with good effect. Mr. Darby, of Louth, has employed it for some years, but he always adds corrosive sublimate to the iodine ointment. These cows have come to

their milk again in all the cases that I have seen; but, perhaps, three weeks or a month have elapsed ere this has been effected, where the tumefaction has been very large.

Mr. Hare.—Does it ever produce an absorption of the milk?

Mr. Evison.—I believe it would in an healthy udder.

Mr. Hare.—My reason for asking that question is, that we often have applications for drying of the milk of cows, and I thought that in iodine we, perhaps, might possess such an agent.

Mr. Greaves.—Mr. Wills says that it has a powerful effect on the absorbents. Has it ever produced mischief by too energetically stimulating the absorbent system?

Mr. Wills.—I have never witnessed any, and I have carefully watched its operation.

Mr. Greaves.—Does it act as a diuretic?

Mr. Wills.—It does not. I have given from seven to ten grains of the proto-iodide of mercury, at the same time that I have been using the ointment topically, in a case of glanders. No good, however, resulted from the experiment.

Mr. Croxford.—For how long a time?

Mr. Wills.—I have given it regularly for a month, and for five weeks on another.

Mr. Hughes.—What was the visible effect of the iodine?—did it increase the secretion from the nostrils?

Mr. Wills.—The secretion was increased at first, but afterwards diminished.

Mr. Hughes.—I have seen an increase of tears in one instance, to such a degree that the horse could scarcely tolerate the light.

The Chairman, in concluding the discussion, said, "We feel deeply indebted to Mr. Wills for introducing this comparatively new therapeutic agent to our notice. Like all new agents, public opinion will be against it. Hitherto I have not employed it; but I shall put it in operation as soon as circumstances permit, and at some future time I will let the Association know the result.

The certificate of membership was awarded to Mr. Clegg.

At the next meeting of the Association the following letter from Mr. Rolfe was read. As it bears upon a subject previously under consideration, it is on that account introduced here.

As there has been a paper introduced by Mr. Wills on the action of biniodide of mercury, and one, I think, worthy of the notice of the profession, perhaps I shall not be deemed much out of order if I relate one or two cases which have occurred to me during my short course of practice, in which the same application, though prepared in an indirect way, has been used, and attended with extraordinary effects. I am also of opinion that many veterinary surgeons unite the unguentum hydrargyri et iodinii, and apply the compound with much benefit. The formula I have generally used is as follows:

℞ Adeps p.p.....℥iij
Iodinii..... .....℈vj
Ung. Hydrargyri ....℥j. Misce.

The first case I shall relate is that of a three-year-old colt, the property of Mr. T. Spalding, of Shipmeadow, near Bungay. He was lame from a spavin on the near hock, for which he was blistered and turned to grass. In six weeks he was taken up again as lame as before he was turned out. The blister was repeated, and he was kept in the stable, it being thought that perhaps he had given himself too much exercise. Another month elapsed, and the lameness had not in the least subsided. Recourse was then had to the abovementioned ointment, and in about ten days he began to improve of his lameness. We continued the application for one month from the commencement, and at the expiration of that time he was quite sound, and the enlargement gradually disappeared.

The next patient was a six-year-old horse, belonging to Mr. J. P——e, of Bungay. He was excessively lame from a spavin on the off hock, and, after the usual means had been employed to reduce inflammation, the actual cautery was applied, with a blister at the same time; and which in the course of a month or five weeks was repeated, but without any beneficial effect. Three months after this we began to use the ointment, which removed the lameness, but not the enlargement. I however believe it would have done this, had the disease not been of so long standing.

A short time since I was requested to see a bull-dog, labouring under bronchocele, or enlarged glands of the throat. He had been under the treatment of a farrier for more than four months, without any apparent benefit. Discutient lotions, blisters, and setons, were had recourse to by me, but very little or no good was derived from them. I then thought I would try my favourite ointment, which I did, giving at the same time four grain doses daily of iodine, and occasionally administering an aperient. This treatment was pursued for about three weeks, and it is now impossible to tell that the glands were ever enlarged.

I have successfully used this ointment in chronic diseases of the udder in cows, when almost all other remedies have failed. I could relate many other cases, but I fear I have already trespassed too long on your time.

Mr. Wills begged leave to ask Mr. Rolfe one question. It appeared to be a point of disputation, whether the compound which had occupied so much of the time of the Association induced the sloughing process. His opinion was well known to the members, but has Mr. Rolfe seen such action follow?

Mr. Rolfe.—Nothing like sloughing has ever been observed by me. As I employed friction, and that twice a-day, in the application of the compound, a little of the hair was removed, but it quickly grew again.

MARCH 17, 1840.

The President in the Chair.

The following donations to the library were laid on the table:—

From the author, Professor Delwart, Brussels, "Pathologie Speciale, ou Descriptive des Principaux Animaux Domestiques."—"De la Parturition des Principales Femelles Domestiques."

From the author, W. C. Spooner, Esq., "A Treatise on the Influenza of Horses."

From J. Hollinworth Esq., "White's Farriery," 4 volumes.

From H. Lepper, Esq., "Every Farmer his own Farrier," 1759.

The following Thesis, by MR. CHARLES CROXFORD, was then read:—

ON OPHTHALMIA.

Gentlemen,—The duties of our profession render it imperative that we make ourselves fully conversant with its principles; so that, when we are called upon, we may be able to adopt such remedial measures as will correct the derangements to which the animal machine is liable. It is also the duty of the veterinary surgeon to perform operations for the removal of diseased parts, and to know how to regulate the system by the timely use of medicines, when local diseases produce constitutional disturbance.

I am fearful my want of ability properly to treat of the subject which I have chosen will be a disadvantage; but, should I fail in my attempt, you will, I feel assured, evince towards me that kind feeling which I have hitherto seen experienced by others. I fear it requires more skill than I possess to impart any information to you, the subject being both abstruse and intricate. I would that some more experienced person had undertaken it; but whether good or evil attend my endeavours, my best wishes are that the discussion may prove useful.

The disease termed Ophthalmia is one that often baffles the skill of the most scientific practitioner, and the cure of which is of the utmost importance to his employer. I am sorry to confess that I have often been an observer of cases, in which the remedial means usually resorted to were almost, if not entirely, valueless; therefore we must consider ourselves as yet involved in comparative ignorance. Let us, however, trust, and not despair; and, considering our resources, let us anticipate the period when some brother professional, at no distant day, will come forward as the discoverer of a remedy for this direful malady.

The eye of the horse is an organ liable to but few diseases, when compared with those described by lecturers as affecting it in the human subject; therefore our writers on ophthalmia and its consequences are limited, while those on this disease in the human are more numerous, and necessarily take a more enlarged view of the subject. Almost all of us can speak from personal feelings of the suffering which attends a disease of that organ; and what means do we adopt! We resort at once to some experienced and skilful practitioner to alleviate our pain.

But to what abuses is that noble animal the horse subjected, when suffering from diseases of the same kind, and treated by empirics! His condition is that of misery and torture! Then it is our duty to become well skilled in the art of remedying such disgraceful evils; and how must we attain to this? In the first place, by studying our subject, and acquiring a competent knowledge of the anatomy of the parts; and, next, by making ourselves well acquainted with the symptoms by which this disease, in all its stages and varieties, is characterized.

The organ, of which I am about to offer a brief and imperfect account, is one that merits our most serious attention, and will well repay the labour of study. I acknowledge that I am desirous rather to learn what I can of the diseases to which it is subject from abler minds; but I also feel it my duty to endeavour to contribute something, however imperfect and worthless it may be.

It is true that I am a senior among you in your scholastic exertions; but I am a junior in practical experience, therefore I more earnestly crave your assistance in the elucidation of the subject which I have chosen.

I cannot help differing from most of our authors on the terms applied to this disease. It is considered to be of two kinds,—COMMON or SIMPLE, and SPECIFIC ophthalmia. It is my opinion that the term specific is not an appropriate one. I may be considered presumptuous in opposing both our late Professor and so eminent an author as Mr. Percivall; but I cannot help expressing my disapproval of the term. I consider that the terms *local* and *constitutional* would be preferable, and, as such, I have ventured to make use of them; it therefore rests with you to adopt or to reject these terms, which I consider better calculated to define the two diseases. You are aware that two diseases of which we are about to speak, when affecting the human subject, occupy almost exclusively the attention of persons named oculists, but the veterinary surgeon is applied to when the horse is the subject of them: therefore, although the diseases of the eye may be few, it is desirable that we should be oculists sufficient to relieve our patients, and thus be enabled to compete with others.

In considering this disease, we must admit its existence in two opposite characters, one of which is termed *inflammation of the conjunctival membrane*, or *local ophthalmia;* the other, from its complicated characters, *constitutional ophthalmia.*

The symptoms of inflammation of the conjunctival, or local ophthalmia, do not differ from those of inflammation of other parts of the body, except in so far as they are modified by the structure of the part and by the function of the organ. Inflammation exists in various degrees, from the slightest state of excitement to that of the most intense character.

I speak of this disease from choice, and not from any presumption that I can throw any new light upon it; and when I inform you of my motive for introducing this subject, you will at once attribute my proceeding to its right cause. I have friends in the country—agriculturists—who have suffered greatly from this disease, and I have seen cases of it in our own stables; but I have seldom seen them yield to the treatment usually adopted. I therefore hope the disease will be fully investigated, and some facts adduced as to the cause of the malady, its proper treatment, and its cure.

As ophthalmia arises from different causes, so it is characterized by different designations,—namely, common and specific. These terms I have objected to in the former part of my Essay; therefore, before I proceed further, I will state my reasons for so doing. As a substitute for the term common or simple ophthalmia, I think the designation "local" much more applicable, from its being the result of external injuries, and confined generally to the outer membrane. This also appears to me much more in accordance with the rules of science, therefore my sole ground for objection has relation to the misapplication of the term used.

I now proceed to describe the symptoms of inflammation of the conjunctiva, or local ophthalmia. In general, simple inflammation of the conjunctiva is an easily manageable complaint. It passes into chronic inflammation after the acute stage has continued for a certain time, and it not unfrequently subsides of itself. A spontaneous cure, however, is by no means to be depended upon, and we ought not to neglect or relax in the proper mode of treatment, because simple inflammation of this membrane may lead to inflammation of the deeper-seated tunics, or the globe of the eye. Suppuration may also be induced; the organ at length becoming permanently disorganized, and the sight of the eye irretrievably lost.

The consequences of inflammation of this membrane are similar to inflammation of any other part of the body. The Members must recollect, when reasoning from analogy between the eye of the human subject and the horse, that the degree of vascularity is greatly deficient in the conjunctival membrane of the latter; but

yet, such being the case, it is easily discovered on the slightest inflammation of that membrane making its appearance. We can, in fact, reason from our own feelings here. When, from irregularity of living or want of proper rest, our organs of vision are debilitated, the vessels become gorged with blood, and rest relieves us. This distinguishing characteristic is easily accounted for: the horse is not adapted by nature to follow those vicious habits to which we are accustomed.

The seat of inflammation of the conjunctiva is at once implied by its name.

The first symptom is redness, which is remarkable, because the blood conveyed by the vessels to this part, in their natural state, is colourless. From irritation or excitement, inflammation is distinctly recognized, by the vessels being injected with red blood; and, in the acute stage, the palpebral conjunctiva lining the lids, and the vessels ramifying over the sclerotic coat, become of the same character and colour. Chemosis is rarely seen. In general but little pain is at first attendant. The animal feeds pretty well, seems but little depressed in spirits, and is unaffected constitutionally. There is commonly an increased secretion of tears, attributable to the lachrymal glands participating in the increased action. There also appears an endeavour to prevent intrusion of light, although this is not a primary symptom, but it may supervene as a casual one, should the ocular vessels sympathize with those of the lids; notwithstanding, the lids will be contracted, and the haw protrude itself over the eye so long as any irritation remains, which circumstance, Mr. Percivall remarks, is apt to induce us to imagine that the eye is also affected. Vision is impaired only in the most violent cases, when the transparency of the cornea is diminished or destroyed by vascular plethora, or the effusion of adhesive matter between its laminæ.

The Causes which most frequently produce irritation in the eye, and lead to inflammation of the conjunctiva, are generally mechanical, such as blows accidentally or otherwise inflicted; hayseeds insinuating themselves under the lids; or laceration of the conjunctival membrane by a whip. Any extraneous substance lodging in the conjunctiva will produce the same effects; and when the nictitans cartilage is not enabled to remove any of these bodies, they are retained in the upper and outer parts of the eye, and, if not washed away by the tears, speedily irritate and inflame the conjunctival membrane.

Treatment.—In these cases I consider that the more simple the means adopted, the more likely we are to effect a satisfactory cure. Local or general bleeding, cooling lotions applied to the eye, diet limited to mashes, bowels kept under the influence of mild laxa-

tives, the animal placed in a cool atmosphere, and the eye not subjected to too great light, are the means I should recommend to be had recourse to.

TERMINATIONS.—Generally in restoration to health, the disease yielding to treatment if the case is in a mild form. Should there be a lesion of the cornea, there will be an opacity of the conjunctiva, and the case will most likely be protracted, and there will be a general thickening from the inflammation. I think it would be advisable in such cases to use a solution of nitrate of silver.

CONSTITUTIONAL OPHTHALMIA.

The late Professor Coleman, in the early part of his career at this institution, made this disease the peculiar subject of his investigation. He divested it of mystery, and dissipated incorrect ideas which had been entertained respecting it: thus he set the subject in its proper light, and removed the absurd and mischievous practices upon which its treatment had been founded, reconciling it with the modern pathology. The term used by the older practitioners for this disease was *moon-blindness*, from an opinion that it was influenced by the change of the moon, and also from its almost certain termination in blindness.

In their ignorant practice, the horse was frequently subjected to the cruel punishment of having the very shield which Nature had formed to prevent foreign bodies insinuating themselves into the eye, and to render assistance when this organ was in a state of disease, taken away.

The danger is considerable in this form of ophthalmia. For my part, I would rather ride a horse perfectly blind than one partly so. I can speak from experience of the risk we are running when proceeding on a journey with what is commonly termed "a pur-blind horse." The least thing will make him start. Every object he passes forms a wrong impression or shadow upon the retina, and he is generally what would be designated a nervous nag; than which nothing can be more unsafe, for, instead of continuing on his back, you may occasionally find yourself on your own back.

The disease generally makes its attack at night. In the morning, when entering the stable, the groom perceives the horse to have a flow of tears from the eye, which is partly closed, and he imagines that something has got in the eye, or that a blow might have been inflicted. He immediately acquaints his master with it, who sends for his professional attendant, and if he is an inexperienced person, he will be easily led astray by the appearances; but he must first duly consider his case before he offers an opinion, and look well to the other eye. Most assuredly he will find the

one in a high state of inflammation, while the other is apparently in health; therefore it is advisable that we should consider well before we give our opinion, or we may be involved in much unpleasantness, arising from the want of proper caution.

With the real nature of this disease we are not at present thoroughly acquainted, as it generally attacks one eye, and we have frequently metastasis taking place in the early stages. This is the reason why I have ventured in the former part of my Thesis to object to the term applied to this disease. It is characterized by being deep-seated; and the opacity of the conjunctiva and cornea is only a concealment to the ruinous process going on within the organ. We are soon enabled to perceive the great structural derangement which has taken place when these parts have again become normal, or have approached to their pristine state.

The Symptoms oftenest perceptible are these: first, much inflammatory action is observed; the secretion from the lachrymal gland is increased; the lids droop, and give the eye a gloomy appearance, and the membrana nictitans projects. The horse is generally out of spirits—his health is more or less affected—his coat looks rough, and there is a great degree of febrile excitement. If worked, an inordinate disposition to perspire is remarked. If an attempt is made to separate the lids for the purpose of examination, we find great resistance offered; therefore the best mode to obtain a view of the interior of the eye is to cause the animal to face a strong light, and immediately turn him to one considerably weaker, when he will generally open the eye sufficiently for our purpose. The cornea will be found so dull, that the iris can scarcely be seen; the pupil more or less narrowed, and contracting with unusual celerity and force when turned to the light, and a hazy aspect through the filmy and dull cornea. The iris partakes of the disease by losing part of its brilliancy, and shews partial signs of discolouration.

As the disease proceeds, the cornea becomes more opaque, until eventually we can no longer see through it, which may be the consequence of its increased vascularity, or of some effusion in the interstices.

Mr. Percivall believes that the aqueous humour partakes of the diseased action. It certainly becomes turbid, and from this cause proceeds our imperfect view of the iris.

He also states that there are cases in which the iris turns of a dead amber hue, from a coating of adhesive matter before the cornea becomes obscured. The corpora nigra also, after a time, lose their jetty blackness, and the pupil becomes so contracted, that we can hardly see through it at all. These, he says, are marks of the disease which are generally attended with conjunctival inflamma-

tion. In some cases this membrane becomes injected; red vessels clothe the opaque, and crowd around the margin of the transparent cornea, and vast numbers shoot over the eye in serpentine lines. In other cases the conjunctival membrane is less violently inflamed. The apparent enlargement of the haw and tenderness and fulness of the lids are owing to the tumid condition of this membrane, and the eye itself becoming more retracted and shrunk than when in health.

In the more advanced stages of this disease, hypopyum, or an accumulation of glutinous fluid, like pus, in the anterior chamber of the eye, and frequently also in the posterior one, often presents itself, in consequence of severe ophthalmia, particularly the internal species, or that which is so well known under the name of iritis. Sometimes we have hypohæma, or a sanguineous fluid effused in like manner.

This disease often terminates in suppuration of the whole globe, and consequent disruption. Light opaque spots are occasionally seen upon the corpora nigra, shewing that these participate in the morbid alterations. But the common ending of all the inflammatory disorganizing action is cataract. Perhaps the inflammation will in a short period abate, when the iris, gradually contracting, exposes a hazy greyish pupil, which appears to be the result of the influence of the disease on the substance of the lens, and which is the prelude to a cataract; for, ultimately, almost all these cases proceed to the formation of cataract.

I have often seen eyes little more than bulbous mases of disorganized matter. The cataract in those cases has forced itself through the pupil into the anterior chamber, or the iris has been pressed before it, and has become firmly adherent to the transparent cornea. I have heard of cases where the lens and its capsule had been transformed into an osseous structure; of this, however, I have never had ocular proof.

Conjunctival inflammation, by some writers, has been considered the principal, by others the primary disease. It may, however, be asked, if this disease is primarily conjunctival, why should it extend to the globe? Local inflammation of the conjunctiva early terminates.

And, again, why should the disease not destroy the texture of the conjunctiva, if that be its primary or principal seat? Every veterinary surgeon must be aware of the progress which this disease makes, especially after he has witnessed it in a few times. The symptoms are not distinctive enough in some cases to enable us to decide whether it is local or constitutional; but, by the inspection of both eyes, we perceive one in a state of apparent health, while the other is suffering from diseased action going on;

we may then determine at once, and give our opinion with safety. We must not infer from the attack being severe that the result will be at once certain; it is often the reverse. The cornea will resume its former transparency, and but slight signs will exist of any abnormal condition, which might have made its appearance when diseased action was going on, but it returns again and again, until it is the destruction of the visual organ.

The disease is seldom seen in both eyes at the same time; it will pursue its course in one eye, and in a month or two a fresh attack is perceptible in the other. If such should not be the case, the same eye will again be the subject of its attack. Its general progress is to attack alternately first one eye and then the other, until both have suffered from unhealthy action, and, ultimately, the termination is in total blindness.

It has been said that a horse with a certain development of the iris never goes blind; I mean the wall-eyed horse: but I have heard of those eyes being diseased in the same ratio with others. I confess, however that I have never seen a case of it. The eye generally most disposed to this species of ophthalmia is the small sunken eye, vulgarly designated a pig's eye.

Causes.—There are great differences of opinion whether constitutional ophthalmia arises from ill-ventilated stables, hereditary predisposition, or constitutional derangement. The advocates of its procedure from want of proper ventilation, or from the vitiated atmosphere of stables, say that the effluvia arising from the breath, perspiration, faeces, and urine, generate an animal poison, which, being gaseous, diffuses itself through the atmosphere of the stable, and is carried into the system through the medium of the air-passages, skin, or alimentary canal, and engenders disease of a local character in the lungs, nose, skin, eyes, &c.; or, these parts are locally affected in the first instance, and, subsequently, the system becomes contaminated.

Another question I will venture to submit to your decision, Will it not afford a reasonable prognosis as to the nature of this disease, if, when dam or sire have suffered from diseased eyes, the progeny should become similarly affected? Are we not afraid of the offspring partaking of the same disease as that which the parents labour under? If we consider that disease is not hereditary, why do we choose a fine-shaped horse or a fine-bred horse for the sire? Do we not expect that by so doing that the colts will partake of both shape and constitution, and breed?

In my opinion it is always commendable to breed from the most unobjectionable animals, and particularly from those with sound eyes; and in this, most likely, we should find a remedy for constitutional ophthalmia.

With respect to ill-ventilated stables, I think that they are oftener blamed than they deserve. In coach and post stables which are crammed, where there is little regard to cleanliness or management, we seldom see horses thus affected; but, on the other hand, I would remark, that such horses are generally what are termed seasoned, or constitutionally sound horses, since young or unseasoned ones are not able to perform the hard work to which these are subjected. May this not be a sufficient reason for the disease not shewing itself in such establishments! I state this as a fact which I have noticed in two or three coach establishments.

It has been conjectured that this disease is brought on by plethora, which takes place in horses at the period when they have attained their full growth. Before this time the blood has had not only to nourish the body, but to assist in the formation of new parts; but, maturity having arrived, there must be a superabundant quantity of blood in the system. This, however, does not account for the great change that takes place from apparent health to a state of disease.

Professor Sewell, in a lecture, at the commencement of the present session, introduced a theory which, perhaps, may enable us to explain this. He is of opinion that ophthalmia arises from local plethora, which, about the age of four years, is considerable, on account of all the molar teeth being developed. Until this period there was blood sent to the alveolar cavities, for the growth of the teeth as well as other parts, and also for the growth of the face, in order to make room for the teeth; but, the molar teeth having attained their full growth at the age of four years, they only require blood enough for their nourishment. The eye being supplied with blood from a branch of the same artery (the internal maxillary), there is an increased quantity of blood sent to that organ at this period; therefore there must be a distention and engorgement of the vessels, which gives rise to ophthalmia.

It is my opinion that some cases have arisen from colts being worked too soon: the change has been too great for them, they being what we term free workers. I could mention three or four colts that have had ophthalmia under such circumstances; but whether it might have been the only cause of the disease I know not.

TREATMENT.—It will be admitted, that, if the disease is constitutional, the employment of constitutional remedies must be had recourse to. We often find the first attack manageable, and occasionally it disappears of itself; but when the system becomes generally affected, it is difficult, or even impossible, to prevent a relapse, and, to our utter discomfiture, we find all means we may have recourse to prove ineffectual.

Should the horse be in a plethoric state, I should recommend

bleeding from the jugular veins and the administration of mild doses of physic. If he is in a low condition, alteratives, such as drachm doses of aloes, are to be preferred, with mashes, green food, &c. I have heard it observed, that bleeding from the palatine artery would be found advantageous; and most likely it would be so, as it is a continuation of the trunk of which the ocular is a branch. Benefit has also been derived from calomel being administered in repeated small doses. Setons have been inserted on the side of the face, just below the eye, and apparently with success; but an objection has been raised to the blemish they leave, which, however, can be of little moment when compared with the preservation of sight. I should certainly introduce a seton or rowel under the throat.

As a collyrium, the dilute solution of the diacetate of lead may be employed, and the vinum opii, in the latter stages, may be dropped into the eye, which will often afford temporary relief. Cold water is also a good topical application, and in my estimation preferable to all others. Light and air are stimulants to the visual organ in health, therefore it ought to be shielded from both when diseased.

This constitutes the essential treatment, and is, in my opinion, the best which can be adopted.

In our examination of a horse we should not fail to notice whether any of the appearances I am now about to mention present themselves: if so, they will justly excite our suspicions. A prominence of the membrana nictitans, vascularity of the conjunctiva, a watery state of the eye, dimness or cloudiness of the cornea, particularly around the margin; dulness, discolouration of the iris, the corpora nigra studded with opaque spots; one pupil smaller than the other, perhaps milky or hazy; a sunken or gloomy aspect of the eye altogether, or a minute white speck in the centre, taking care that we are not deceived by the entrance of the optic nerve;—these are circumstances which should make us pause, or which should induce us to reject the horse altogether.

If to any of these appearances there is to be added an opacity, partial or complete, of the lens or its capsule, or both, this is cataract, and it is the common termination, sooner or later, of internal or constitutional ophthalmia.

Mr. Evison.—Mr. Croxford recommends the abstraction of blood from the jugular vein, and likewise from the palatine artery. Would he not also recommend scarification of the eyelids? I have seen it attended with very good effect in allaying inflammation of the eyes.

Mr. Croxford.—No. I think it would cause too great irritation, and thereby add to the original disease.

The President.—The disease which forms the subject of the present Essay

is one of frequent occurrence, and there is a form of the disease over which, in the exercise of our art, we have hitherto possessed very little control. It is highly important that we should endeavour to make ourselves acquainted with its leading causes, because by that means we may, perhaps, render ourselves of some use to our employers, by inducing them to adopt such measures as may prevent its appearance or its extension. I therefore think that it would be advisable, first, to consider the causes of ophthalmia; then to proceed to speak of the symptoms, and, subsequently, of the treatment.

There are, it is well known, a variety of opinions with respect to its causes; it would be desirable, therefore, that every member of the Association—many of whom have had practical experience in different parts of the country—should express his opinion on this very important point.

Mr. Hubbick.—Mr. Croxford has expressed himself to be of opinion that horses which are the offspring of sires or dams that have laboured under the disease are more subject to ophthalmia than others are. Does he conceive it necessary that either the one or the other should be affected with the disease at the period of copulation? or does he not think that, the parent having previously had the disease, and now labouring under cataract or blindness, will communicate it to its offspring?

Mr. Croxford.—I have no doubt that it will.

Mr. Hubbick.—We had an entire horse that had been affected with constitutional ophthalmia, most of whose colts became blind at three years old.

The President.—You believe, then, that the offspring of horses which have been the subjects of previous attacks of this disease are highly predisposed to it?

Mr. Hubbick.—I do; for I have known many cases of it in the stock of this horse and others.

Mr. Dunn.—During my apprenticeship I saw several horses which had been examined previous to descending coal pits, and that were perfectly sound, so far as their eyes were concerned. After being there a short time they were taken up, and were soon afterwards attacked with severe ophthalmia, which terminated very rapidly in blindness. Was this the effect of the gases evolved from the coal? Probably our Secretary will kindly inform us on this point.

The Secretary would not refer it to any gaseous emanations, but simply to the sudden transition from darkness to light and to the undue stimulus of light acting on the visual organs, debilitated by long continuance in darkness.

Mr. Smith.—I come from a coal country, and I have seen it produced by the coal dust. The general impression in the neighbourhood of the mines is, that it arises from that source.

Mr. Barthe.—During my stay in Wales I had many opportunities of noticing the effect of transition from darkness to light, in horses which had worked in coal-pits and other mines. In cases where it was found necessary to remove them from under ground, I invariably found that their eyes became more or less affected from the second to the fifth day. This occurred more particularly in the warm summer months, when the sun is most powerful. I think there can be little or no doubt as to ophthalmia being the effect of transition from a dense to a rarer medium.

While there, I saw a stallion that had lost its sight entirely from constitutional ophthalmia. Its owner had two mares, the produce of this stallion. One was two years old, and the other three. One was totally blind, and I have no doubt that by this time the other is in the same condition.

I repeat that I have not the slightest doubt of ophthalmia being thus produced. I have known many horses that have been underground for a length of time, and when they were first brought up their eyes appeared in the na-

tural healthy state; but they soon became affected. I believe the darkness predisposes them to the disease, but being kept in that dark situation, they do not become diseased while there. After being in a coal-pit or mine ourselves for several hours, on coming up we find the rays of the sun act as a powerful stimulus, and the eyes are somewhat inflamed.

Mr. Greaves.—Suppose, after being taken out of the dark, they were gradually exposed to the light, do you not think that disease might be thus prevented?

Mr. Barthe.—No doubt the eye might, if care were exercised, be brought to its natural state and condition; but I think it is evident that it becomes somewhat altered—some organic change has taken place—from the animals being for so long a period in this dense or dark medium.

Mr. Evison.—It has been stated by our Secretary, that a sudden transition from darkness to light would have a tendency to produce ophthalmia. I am quite of that opinion; for it is the custom where I reside to keep cart-horses in stables with no windows, but merely flap doors, and I know that the disease has prevailed there to a great extent.

Mr. Hare.—Have you seen horses that had been kept up a long time, and fed on mouldy hay or corn, have their eyes affected—more particularly when eating the former? I have often met with such cases, and have attributed them to the mould of the hay acting as a stimulant.

Mr. Croxford.—I have heard of such instances, but never witnessed them. The dust of the hay might, by irritation, produce local ophthalmia, and by bad provender the system may become debilitated, thus predisposing the body to disease, so that on an irritant being applied to any organ inflammation is set up. I would ask, has any gentleman seen constitutional ophthalmia occur in horses six or seven years of age?

Mr. Cresswell.—I have seen it later than that period in coach horses when turned out to grass.

Mr. Hubbick.—Three years ago, many cases of ophthalmia came under my notice. Lord Derby, and others, had almost all their horses attacked, and many of them went blind. The treatment adopted was bleeding from the jugular vein or temporal artery—one is as effective as the other—and collyria of the dilute diacetate of lead. One was an aged horse, I should think twelve or thirteen years old. The disease prevailed during the spring of 1837. A great many farmers had their horses attacked about the same time. They were kept in stables at night, but engaged in the usual farmer's work during the day. The state of the atmosphere was very variable. I could not satisfactorily determine the cause of the disease: it seemed to prevail as an epizootic, although these horses were unaffected by the epizootic which was then so general.

Mr. Croxford.—Most of the cases of constitutional ophthalmia which I have seen occurred in young horses, from two to four years old, when first taken to work. We generally commence working cart-horses at two years old. It has been said to take place in free-working horses, and that they draw themselves blind. I have also seen it in young horses that were not free-workers; but I never knew this complaint occur in an old horse. I think it must result from the constitutional changes which are incident to the early period of life.

The President.—In the case mentioned by Mr. Hubbick, of an old horse being attacked with this malady—is that gentleman sure the animal had not been the subject of a previous attack? Was there no abnormal state of the eyes?

Mr. Hubbick.—None that I am aware of. I had known the horse three or four years, and I have seen four or five similar cases.

Mr. Wills.—Would you not rather attribute these cases of ophthalmia to gaseous emanations arising from a decomposition of vegetable matter, than to cold or changes of temperature in the atmosphere?

Mr. Hubbick.—I cannot give a decisive answer to that question. I think it very likely that there was something engendered which was injurious to the system; but I cannot say what decomposition took place at that season of the year: it was rather before the spring.

The President said that Mr. Dunn's observation went to this effect—that horses working in coal pits, and which have continued there for some length of time, after coming up and being exposed to the light, are attacked with ophthalmia; but not during the period of working in the pit.

Mr. Smith.—I have seen them brought up labouring under ophthalmia, with which they have been attacked in the pit.

Mr. Hubbick.—I come from the same country as Mr. Smith; but I never saw a horse suffering from ophthalmia previously to its being brought out of the pit; the disease has occurred subsequently, and the animals generally go blind.

Mr. Dunn.—Have you observed that some particular coloured horses are more liable to the disease than others? Have you not known chestnut horses to be commonly affected with constitutional ophthalmia, and also cataract? My reason for asking the question is, that I saw two chestnut horses strongly affected with this disease, and in a short time they became perfectly blind. I attributed it to hard running and nervous excitement.

Mr. Croxford had seen black and grey horses most affected, and he should think it likely that the cases Mr. Dunn referred to had been caused by the horses being young at the time they were running.

Mr. Riches.—I have seen three or four cases in foaling mares, and I considered it to have something to do with parturition. They were cart mares five and six years old, and the disease shewed itself when the foals were taken from them.

Mr. Wills.—What is the cause of gutta serena, or amaurosis? Is it hereditary?

Mr. Croxford.—I conceive it to be paralysis of the optic nerve, produced sometimes by a blow; in other cases, the termination of constitutional ophthalmia. It is often hereditary.

Mr. Wills.—Some horses have naturally small eyes, and I think they are more susceptible of the disease than those whose visual organs are larger.

Mr. Croxford.—I have seen many horses with what are called wall-eyes sound through life; and I have also seen them in a state of disease.

Mr. Evison.—You are aware that the conjunctiva is a mucous membrane, and that it secretes mucus to lubricate the parts over which the tears pass. If there is not a healthy secretion of mucus the tears become irritants to the conjunctiva. Do you consider that this produces ophthalmia?

Mr. Croxford.—I certainly consider it a species of local ophthalmia.

Mr. Sibbald.—I should think that every case is local in the first instance. There must be some stimulant which produces inflammation, although it may be occult in its attack; whether that stimulant is an increased flow of blood sent to the part after the colt has got its teeth, or after a mare no longer requires a secretion of milk, or there is an intolerance of light from a horse coming up out of a coal-pit. The organs are then weakened; they are liable to take on inflammatory action from slight causes, and constitutional ophthalmia supervenes. I have seen many cases in which the eyes have been inflamed three or four times before blindness came on. I saw one remarkable case about eighteen months ago. An eight-year-old mare was bought. It was doubtful whether her eyes were sound; some of the profession were consult-

ed, and they considered them sound. Two months after she was purchased inflammation, or constitutional ophthalmia, supervened: this has recurred four times, and now, eighteen months having passed, she is blind. One eye was, apparently, not affected with inflammation; but cataract came gradually on. It is true, it might have been diseased before; but it was not attacked with inflammation during the whole of the eighteen months; and, when she was bought, its soundness was not doubted. However, she is as blind with that eye as with the other.

Mr. Hubbick.—Probably there had been a metastasis from one eye to the other. I have never seen a case in which first one eye was affected, and then the other, in which the animal did not go ultimately blind. When a horse has been taken up from grass, kept in a dark stable, and well fed, and has had ophthalmia of one eye, that eye has frequently got better. I have known some cases in which the animals did well after having been turned out. Young horses often have ophthalmia, and as frequently get well; but this is merely local or accidental ophthalmia.

Mr. Fisher.—I think it doubtful whether this disease is always hereditary. *Safeguard*, a stallion, belonging to the Earl of Derby, lost his sight while training. He came down to Bristol to serve mares. A question arose, how he lost his sight; but no satisfactory conclusion was arrived at. I have seen many of his stock, from two to four years old, and their eyes are very good. Many gentlemen have bred from him, and I never heard of his colts being diseased.

Mr. Lawrence.—The sire of *Safeguard* is *Defiance*. I have known a colt by him blind at three years old.

Mr. Fisher.—I think *Safeguard* covered twenty mares at Bristol, and, as I have already said, I never knew of one of his colts labouring under ophthalmia. He is now covering near Worcester at a great price, and many gentlemen of influence put their mares to him.

Mr. Cartwright.—What is the present age of this horse's stock?

Mr. Fisher.—Those which I have seen are four years old.

Mr. Cartwright.—Do you not think it probable that the disease would come on if the horses were put to work?

Mr. Fisher.—I cannot say. I only speak of what I have seen. Some are at work.

Mr. Evison.—A horse has been travelling through Lincolnshire for nine or ten years covering mares. He was blind when he came into that county. I know a great many of his offspring, but I never knew one affected in his eyes. My father has several of his stock.

Mr. Cartwright.—I consider it a very important point, and one which should be decided, whether it is prudent to put a mare to a horse labouring under ophthalmia. If the horse alluded to by Mr. Fisher had every good quality about him except this disease of the eyes, would he put a good mare to him?

Mr. Fisher.—Not if I knew that he had lost his eyes from ophthalmia; but being unaware of this, I might be led to conclude that he had lost them from some external injury.

Mr. Hare.—Do you consider that what we term *blind* in sheep is ophthalmia?

Mr. Croxford.—I should consider it such. I have not seen many blind sheep, but I have seen some. The causes may have been local, as travelling on a dusty road; or it might have been consequent on their being penned too close together. I saw it in the summer time on grazing land. I consider it referrible to some peculiar state of the atmosphere. I have sometimes seen fifty or sixty in a flock; they were attacked simultaneously.

Mr. Evison.—I can bear testimony to the eyes of sheep being affected with ophthalmia. My father had several in that condition. They were penned up at the time the attack came on, and were feeding on turnips. It had all the appearance of ophthalmia. The whole flock became affected. We placed a small quantity of mercurial ointment over the anterior part of the eye, and they did well.

Mr. Hare.—Has Mr. Evison seen the disease in sheep on grazing land?

Mr. Evison.—They are more subject to it when penned together.

Mr. Mackinder.—It do not think that it depends on turnips; indeed, I know that it does not in all cases, for I have seen it after over-driving, where they have come from a fair. I have known as many as eighty affected at the same time. I have also seen it in marshes near the sea side after the sand has been drifted by rough weather. Those which came under my notice required but little treatment; merely that of cleansing the eyes from extraneous matters which were between the lids, and they soon got well of themselves.

Mr. Hare.—The inflammation will generally soon subside. Those I refer to also got well; but the cause could not have been the same as Mr. Mackinder's, since the sheep had never been out of the pasture.

Mr. Cartwright.—Does Mr. Croxford think that the pressure of the collar upon the jugular vein may be a cause of ophthalmia?

Mr. Croxford.—Certainly; it must impede the passage of the blood through the vein, and thereby cause congestion of blood in the head, and probably of the eyes. I should think, however, that if the collar were eased, it would at once be remedied.

Mr. Cartwright.—I have often felt disposed to attribute it to that cause in young horses.

Mr. Croxford.—I never noticed that particularly because I have seen it in horses in the open atmosphere and in colts which have been worked with collars. It may be a predisposing cause; but I do not think that it is worthy of being enumerated among the proximate causes of this disease.

Mr. Croxford.—Setons under the eyes and in the throat, and blisters around the eyes, are sometimes advocated as counter-irritants; but I cannot say that I much approve of either. I recollect a case which terminated in the loss of one eye in consequence of a blister being improperly applied.

Mr. Hubbick.—About twelve months ago a case of ophthalmia occurred in a fine horse, five years old, belonging to the Duke of Northumberland. We passed a seton under his eye, and employed a lotion of the acetate of lead. The Duke inquired whether a blister might not be useful behind the ears. It was a very severe attack. My brother replied, that he had not been in the habit of employing blisters; but he did so in that case, and the animal got well. I ought, however, to state, that he was going on well before; and I therefore do not suppose that the blister had very much effect.

Mr. Evison.—When a horse is attacked with constitutional ophthalmia, how long may it exist before it terminates in cataract? My reason for putting the inquiry is, that Mr. Sewell was once asked the question by a judge, and he replied, "six or eight weeks."

Mr. Croxford.—The disease may pass from one eye to the other. One eye may get well in five or six weeks, and then the other become affected; and so on. It will, perhaps, exist a twelvemonth before it terminates in cataract.

The President.—The formation of cataract will entirely depend upon the degree of inflammatory action. A judge once asked him this question—If a horse had inflammation of the bowels, how long it would be before it produced death; or if it commenced in one coat, what time would elapse

before it extended to the others. Now, it is right that we should have a general view of these matters, so as to be able to state whether the disease is of a chronic or acute character; but as to giving a positive opinion with respect to a few weeks, or even a few months, it is not always in our power.

Mr. Evison.—If you examined a horse which appeared sound in the eyes to-day, and, in two months afterwards, it was affected with cataract, should you be able to say how long the disease existed prior to this termination?

The President.—No; I should say the disease was of some standing, but I should not be able to specify the time. With regard to the diseases to which the eye of the horse is subject in a state of domestication, I am of opinion that, hitherto, we have been far too much confined in our ideas. The eye is a very complicated organ, consisting of a variety of parts, and those parts differing materially in their structure, and also in their susceptibility of being acted upon by certain agents. Hitherto we have only been in the habit of recognizing a disease which has been termed *specific* ophthalmia—implying, as I have many times said, nothing. The diseases termed *simple* ophthalmia and gutta serena have been said to be almost the only recognized ones to which the eyes of the horse are liable. But I am of opinion, not only from what has been advanced in this theatre to-night, but from my own practical experience, that the eyes of horses in a state of domestication are liable to a variety of diseases, all depending upon the peculiar position in which these animals may be placed. There may be conjunctival inflammation independent of any inflammatory action going on in the interior of that organ; inflammation of the iris, independent of the other constituents of the eye; or the inflammatory action may be confined to the retina, or the ciliary margin, or the choroid coat, or any other tunic. I think that, in our present advanced state of knowledge, both as it respects the anatomy and the physiology of the eye, we ought to be more cautious than we are in our diagnosis of disease which may be merely confined to one particular part of the organ and be of a local nature, and that which pervades the whole organ and is of a constitutional character.

However, it must be admitted, I think, that of all the diseases to which the eye of the horse is subject, there is one which is more frequent in its occurrence than any other; and it is also one which baffles our skill in attempting to eradicate it, and restore the organ to its natural state.

Professor Coleman termed this disease *specific* ophthalmia, and scarcely admitted the fact of its being referrible in a great degree to hereditary predisposition. He considered it as almost entirely dependent on the generation of animal poison, consequent upon a number of horses and other animals being confined in a small space.

I am so impressed with the fact of this particular disease to which I allude, in which the whole of the interior of the eye becomes involved, all the tunics participating in the inflammatory action, and which attacks horses more commonly at the age of from two to four years than at any other period, depending, in a great measure, on the time at which they are taken into a state of domestication;—I am so impressed with the fact of its being referrible to hereditary predisposition, that I think the best term we could give it would be *hereditary ophthalmia*. But while I say that it is referrible to a predisposition inherited from the parent, I do not say that the offspring must necessarily be attacked with this disease. No; it has been justly observed by Mr. Sibbald, that there must be some exciting agent to develop it; but when that agent is applied, it is somewhat similar to the application of a lighted taper to a piece of tow—the flame will spread so rapidly that it is difficult to extinguish it. If you apply a lighted taper to some other material not quite so inflammable, although it may be set on fire, you still have it under your governance, and you can extinguish it when you please. But where there is this hereditary predisposition to ophthalmia—whether the eyes become inflamed from an accumulation of gases in the stable, or from irritation produced by extraneous matters from without, or from any cause either apparent or occult—the disease becomes unmanageable, and runs its course, adopt what measures you may. I never yet knew an instance of a cure being effected.

I could relate many instances in proof of this disease being hereditary, but one, in particular, occurs to my mind. A horse of my father's was the sire of many colts, and I do not know a single exception to their being attacked with this disease. A gentleman, whose veracity I could not doubt, stated to me that the stock of a certain horse were all affected with this constitutional ophthalmia; yet that horse had never suffered from this disease, for his eyes were apparently perfect: but on tracing him back to his sire, it was found that he had become blind. This tends to shew that, although the animal was predisposed to ophthalmia by birth, yet it escaped the attack—no exciting agent, probably, having been brought to bear upon it: still its offspring all suffered from the complaint. I have heard of several other instances of this description.

Mr. Sewell calls it *odontalgic ophthalmia*, when it arises in consequence of plethora in the vessels of the head, from the cessation of the flow of blood for the formation of the teeth. I agree with him in considering that this is one of the exciting agents: still it is merely *one of them*. If the horse had not an hereditary predisposition in his system this excitement would never produce this constitutional affection,—at least that is my decided opinion. I

am also of opinion that other things may operate precisely the same as the completed formation of the teeth. Any thing which will tend to disarrange the equilibrium of the circulation of blood in the system will act on this susceptibility of the eyes to disease, and consequently they will become affected.

I think that, in ninety-nine cases out of a hundred, the disease may be traced to this hereditary predisposition. I do not mean to pretend that it cannot be generated; possibly it may; and I should think that the best way to effect it would be that which is too often pursued; namely, to keep on bad provender a number of horses in a small space, and allow them to be exposed to the noxious emanations which would be there plentifully produced.

Again: Where do we find the disease most to abound? Among farmers' horses, so far as my experience has gone, where little care is taken with regard to the soundness of the sire. It is true, I may be told that, in farmers' stables, dirt and filth are allowed to accumulate; but it must also be remembered that pure air is permitted to enter through the various holes and nooks which are generally found in them. In those counties, too, where blind stallions abound, you more particularly find blindness of colts. The fact cannot be too much impressed on our minds, that it is our duty to dissuade farmers from employing stallions which have lost their eyes by constitutional ophthalmia. By keeping this in view we may be the means of averting an immense deal of suffering and of loss.

Mr. Hinge.—Mr. Croxford says that he would employ tinc. opii in the first stage, and during the existence of inflammatory action; yet our President says that it acts as a stimulant: is there not some contradiction here?

The President.—It will be borne in mind that this remedy is applied to a mucous membrane. I do not mean to state that the immediate effect of a stimulant is that of lowering the inflammation existing in a part—the reverse of this is true, for, apparently, we still further increase the amount of inflammatory action; but we often restore the parts more speedily than we should do by milder measures. This is the modern mode of treating gonorrhœa. In sore throat we employ Cayenne pepper; and so in various other cases.

Mr. Sibbald.—Am I to understand you that the hereditary predisposition is like the *vis vitæ* of the blood? or is there an abnormal structure of the vessels of the eye?

The President.—I have doubt on that point. I am inclined to think that it is something actually in the system independent of conformation, because I have observed that in those horses which become blind by accidental causes—and which was probably the

case with the one to which Mr. Fisher alluded—there is found, on examination after death, the same wasting of the optic nerve, and the constituent appendages of the eye, that we meet with where the animal has become blind from constitutional ophthalmia. Hence we might infer that there was a deficiency of proper conformation, both in one case and in the other. But the stock of a horse that has lost its eyes from accidental causes does not appear liable to attacks of this disease; whereas that of a horse which has become blind in consequence of constitutional ophthalmia is almost invariably affected. Therefore I am inclined to think that there is some *vis vitæ*—some susceptibility, which exists in the system at large.

MARCH 24, 1840.

Mr. Daws, V.P., in the Chair.

Mr. W. C. Spooner, V.S., Southampton, was elected a Member.

The Secretary.—With a view to direct the discussion to that division of Mr. Croxford's Essay on which some have thought that sufficient inquiry has not yet been instituted, namely, *the treatment of ophthalmia*, I will ask Mr Croxford if he is aware of an instance in which cataract has been removed from the eye of the horse either by a surgical operation or any other means. I confess that I am not a believer in any advantage which is ever likely to accrue from having recourse to the operation of couching in the horse. I am acquainted with one instance in which it was tried, and it proved a complete failure. A knowledge of the structure of the crystalline lens would lead us to the conclusion that it is not likely that we shall obtain any real or permanent benefit from this operation on our patients. The good which follows it in cases of confirmed cataract in the human subject is that of affording a partial restoration of sight. Now there can be no question, I think, that a horse with impaired vision is worse than a horse absolutely blind; and as we have no means of aiding and assisting vision in him by the mechanical contrivance of optical instruments, such as a human surgeon employs, I think the operation of couching can never be had recourse to with any beneficial result. Nevertheless there are cases of cataract in which I think relief may be afforded. I refer to that kind called capsular cataract, in which the capsule is diseased, and not the crystalline lens itself. As this is the result, in all probability, of some morbid action going on in consequence of inflammation, I can conceive that we may cause a removal of the thickened

membrane, or of the matter which has been deposited in or upon it; and this would be very likely to be accomplished by saturating the system with some of the compounds of iodine. The compound which I should prefer would be that which has lately been brought under the notice of the Association,—namely, the prot-iodide of mercury. As we know that mucous surfaces are particularly influenced by the compounds of mercury, and the absorbent vessels by those of iodine, we have here a therapeutic agent which, in recent cases of capsular cataract, would be very likely to cause an absorption of the newly deposited matter. I throw this out as a hint merely.

The instance that I have referred to of the operation of couching having been had recourse to for the horse, I regret that I cannot put the Association in possession of the full particulars of the case; but I hope to do so on a future occasion.

With respect to the treatment of chronic ophthalmia, there is frequently left behind, after the subsidence of acute inflammatory action, much opacity of the cornea. Whether this arises from some derangement in the laminæ or plates making up the cornea, or from a turbescence of the fluid interposed between these laminæ, I cannot positively state: but the best treatment for this stage of the affection, is the introduction of the nitrate of silver; and this is now applied so strong, that it would almost startle a person not acquainted with the fact. Five and sometimes even more grains are added to a drachm of lard. A small quantity of this ointment, about the size of a pea, is then introduced under the eyelid, and by the motion of the lid it is quickly diffused over the eyeball; or the like quantity may be dissolved in water. The result is a considerable amount of irritation, by means of which a new action is set up in the vessels, and health is thus restored to the organ.

You must have had an opportunity of noticing the annoyance which this thickening of the cornea often creates, and the length of time which elapses before it is removed by the ordinary means.

As the remedy to which I have alluded is applied to the visual organs of the human subject, I think we should be warranted in the introduction of this compound for the horse. In some extreme cases I know that a rod of nitrate of silver itself has been employed.

Mr. Cartwright had witnessed the removal of several capsular cataracts They disappeared by means of some natural process set up in the organ which he could not account for. There was no application whatever resorted to, and they disappeared in two or three months. It is true that they had not attained any size, nor did they much interfere with vision, but they were sufficiently distinct.

Mr. Cresswell.—How might a lenticular cataract be known from capsular cataract? Is there not some care requisite in the discrimination?

Mr. Cartwright.—Although this is the case, still, I believe, it may be ascertained. The relative situation of parts would be our criterion.

Mr. Cresswell.—I have examined the eyes of several horses labouring under cataract, and I have noticed that, when it is lenticular, the opaque spot is very small; when it is capsular, it is more diffused.

Mr. Hubbick.—I think that by a side view you may distinguish a capsular from a lenticular cataract. For the former you must place the horse in a strong light, and look through the eye; but you cannot see a lenticular cataract unless you look straight into the eye.

Mr. Dunn.—When a horse is placed in a strong light, the muscles of the iris become contracted, and consequently the pupillary opening must become diminished. I should prefer a moderate light for this purpose. It is impossible for a veterinary surgeon to examine a horse's eyes clearly in a strong light. I should place him in a shed or a doorway.

Mr. Hubbick.—I consider that he is placed in a strong light when brought into a doorway. If the light is not powerful, we shall not be able to detect an incipient cataract.

Mr. Croxford.—For thickening of the palpebræ, I have generally found that bleeding and cooling applications will effect its reduction as soon as any measures that can be adopted. I do not like the practice of scarification; I think it increases rather than diminishes the disease, by creating irritation. I apprehend that bleeding from the jugular vein is quite sufficient, and the best mode of depletion.

Mr. Dunn.—There is an affection omitted by Mr. Croxford in his Essay which I believe ranks under the division of ophthalmia, and is called *iritis*. During the last vacation, I was consulted respecting a horse, and was rather puzzled, for I scarcely knew what to term the disease. It did not appear like common ophthalmia, but there was a diseased state of the iris: it was everted, and a small abscess of a red colour was formed underneath it, which burst into the anterior chamber of the eye, and afterwards the horse became totally blind, from lymph being thrown out over the iris, which curtain had lost its contractility. The lymph thrown out was of a brownish colour, which impeded the passage of the rays of light through the transparent cornea, of which membrane there was likewise an opacity, but it became perfect in a short time. In the early stages the lymph which covered the iris was very visible, and we could likewise see the discharge from the small abscess which had burst under the iris.

Mr. Cartwright.—Then it was principally the disease of the cornea which ultimately produced the blindness. The inflammation or the abscess of the iris would not have done it, because there would still have been the pupillary opening through which the rays of light would have penetrated.

Mr. Dunn.—The pupillary opening became partially closed; and then, the lymph being thrown out, and inflammation set up, it caused an opacity of the cornea. The aqueous humour also became turbid. I could not learn from the groom whether the horse had received an external injury, or that he had been the subject of inflammation of the eyes previously. I should like to have known that fact. The disease was so deep seated, that we could not well get at it without employing a very small instrument. It would have been rather a dangerous operation to open the abscess, I therefore left that to nature, and it burst spontaneously. The abscess was about the size of a pea. I treated the horse for common ophthalmia by cooling lotions, bleeding from the jugular vein, and administering opening medicine. I also introduced calomel mixed with a portion of honey or treacle, as we always do in cases of chronic ophthalmia.

Mr. Croxford.—In constitutional ophthalmia, and with good effect?

Mr. Dunn.—Yes, in a great many cases. We have tried almost every thing, and we never found any thing better than a small portion of calomel mixed

with honey, and introduced into the eye with a feather. I should say that it acted as a stimulant, and thus promoted absorption of the newly deposited and morbid parts.

Mr. Bradshaw.—Mr. Croxford has stated in his Essay, that where severe inflammation exists he would apply tinctura opii. What would be the effect of it?

Mr. Croxford.—I believe that was an error of mine. It is not generally applied in the acute but in the chronic stage of ophthalmia, where there is opacity of the cornea. In the first instance, it stimulates the vessels of the eye, and unloads them of their distending blood: and afterwards it acts as a sedative to the vessels. I therefore beg leave to correct myself. I would not apply it where there was much inflammation, that is, not in the highest stage of inflammation. I believe our President stated that this was the treatment he adopted, and he thought it was beneficial and deserved attention.

Mr. Hughes.—It appears that Mr. Croxford objects to scarification of the lids on these grounds, because he thinks it adds to the disease instead of diminishing it; and that bleeding and topical applications answer quite as well as scarification could by possibility do. I, however, am of opinion, that unloading the inflamed vessels would be better than abstracting blood from a distant part. In the human being we find no practice so successful as scarification. We generally find that by our scarification the vessels regain their proper caliber. It is true I am reasoning from analogy, never having seen a case of tarsal ophthalmia in the horse.

Mr. Croxford.—I have seen the vessels regain their proper caliber from the treatment of which I have spoken; and I think the more simple the treatment the better it is.

Mr. Cartwright.—Does not Mr. Hughes think that every advantage which could be derived from scarification would be obtained by bleeding from the jugular vein; and with this addition, that you would incur no risk of injuring the eye? It is necessary that a certain degree of inflammation should be excited to unite the parts involved in the scarification, and, after the disease had subsided, this would keep up an amount of irritation which might prove injurious.

Mr. Hughes.—If you injure the vessels, it would doubtless be better to omit it; but I have seen very many cases in the human subject where it has proved beneficial.

Mr. Cartwright.—The vessels would be injured by cutting them across.

Mr. Hughes.—Only where they carry red blood.

Mr. Cartwright.—They do carry red blood. I cannot at all agree in the propriety of the treatment proposed. I think every benefit to be derived might be obtained by bleeding from the jugular vein. Scarification would be a local depletion for the time, but I fear the subsequent consequences.

The President.—It is the opinion of some practitioners, that scarification of the eyelids tends to prevent the secretion of pus in purulent ophthalmia. I am inclined to think that it more generally does harm than good when it is resorted to. Mr. Croxford in his Essay asks the question, whether gaseous effluvia arising from putrid matter contained in a stable are not likely to produce both local and constitutional ophthalmia. I believe they act in both ways. I have seen instances of local ophthalmia, where horses have stood on dung in a putrid state; and in other cases, where this poison has been absorbed, constitutional ophthalmia has supervened.

Mr. Sibbald.—I confess I do not exactly understand the difference between local and constitutional ophthalmia.

The Chairman.—I am sorry that I cannot offer any thing novel on the point. I can only repeat what I stated when the subject was discussed two or three years ago. I consider that local ophthalmia may be called acci-

dental. It generally arises from some mechanical cause; a blow from a whip, or the introduction of a foreign body into the eyes, such as hay-seeds, or a portion of lime from horses rubbing their heads against the wall. I should think that putrid effluvia form another cause of local ophthalmia. The treatment which I have generally found successful is that recommended by Mr. Croxford, —local depletion, aperient medicines, and the application of cooling lotions. I know nothing better than cold water, or diluted liquor plumbi diacetatis. With regard to constitutional ophthalmia, I think its causes were pretty well discussed on our last night of meeting. It was generally considered to be hereditary, and I have no doubt that it is so; but it may be produced by other causes, such as exposure to a strong light, &c. I am not aware that one class of horses are more subject to it than others. I have witnessed it in coach, saddle, and cart horses. The treatment I would recommend would be bleeding, laxative medicine, and in the first stage a lotion composed of acetate of lead: but if there is any opacity, or lymph is thrown out in the anterior chamber, or on the coats of the cornea, recourse may be had to the introduction of the tinctura opii by means of a camel's hair pencil. In the after stages, a solution of nitrate of silver may be applied; or, if there be a morbid contraction of the pupil, the extract of belladonna will produce dilatation of it. The surgeon must be careful not to apply too much of this, for it has a powerful influence, and will produce gutta serena. Constitutional ophthalmia is generally accompanied by injury of some part of the brain, or an extravasation of blood on the optic nerves; and if there is gutta serena, it is seldom that any treatment will prove of benefit.

Mr. Sibbald.—It is your opinion, then, that local ophthalmia arises from external injury. I think, under such circumstances, it ought not to to be called ophthalmia; it is a simple inflammation of the eyes. It appears to me that there is but one kind of ophthalmia, and that arises from constitutional causes. I cannot conceive of local ophthalmia. Constitutional ophthalmia is, in my opinion, a correct term, and the disease is hereditary. There is something in the visual organ which predisposes it to take on inflammation on the application of any stimulating cause. There must, however, be a stimulus applied—abstraction from the light and subsequent exposure to it, or some circumstance of this kind, in order to excite the part to take on inflammation. I think this is a very different state from external injury, such as arises from a blow, or from a hay-seed. In erysipelas of the hand inflammation is present; a blow on the hand will also produce inflammation; but I should not call that erysipelas.

Mr. Croxford.—Where there is opacity of the transparent cornea or conjunctiva, so that the light cannot pass through, and exercise its proper influence on the optic nerve, is not that to be considered as ophthalmia?

Mr. Sibbald.—No; for I have seen a part of the cornea removed.

Mr. Croxford.—I must beg to differ from Mr. Sibbald. Where there is opacity there must be ophthalmia, whether it lasts for a long or short time.

Mr. Twinberrow.—The definition of the term ophthalmia is, perhaps, of little moment. I know that there may be opacity of the cornea without ophthalmia—at least, if you call it ophthalmia, I have never so considered it. I understand by ophthalmia, a specific disease. There may be opacity of the transparent cornea from a blow, or the introduction of a hay-seed, affecting one eye, and one eye only: I certainly do not consider that ophthalmia.

Mr. Faulkner.—I always understood ophthalmia to be inflammation of the eyes, arising from any cause whether constitutional or local.

Mr. Croxford.—In reference to the gaseous emanations adverted to by our Chairman, I would say, I believe that they produce simple ophthalmia by acting as a stimulant to the coats of the eye. They constitute a poison, the exact influence of which we cannot determine.

Mr. Twinberrow.—You do not, then, think that it is through the absorption of gases into the system that ophthalmia is produced?

Mr. Croxford.—Our Chairman has stated that it does thus produce it.

The Chairman.—That is my opinion. I expressed myself to this effect—that it acted both ways. It produced local ophthalmia or inflammation by direct conjunction with the eyes; and constitutional ophthalmia by absorption into the system.

Mr. Twinberrow.—I believe that these noxious gases act as a stimulant merely on the eye itself. Ammonia—one of the gases given off—will cause inflammation of the conjunctiva: of this the effect on our own eyes on entering an ill-ventilated stable is a sufficient proof.

Mr. Dunn.—Ophthalmia may be brought on in the human subject by various causes. Sometimes it is the result of the venereal disease: it has occurred from people wiping themselves with towels on which purulent matter has been left. Can it be produced in the horse by applying to his eyes a portion of the matter taken from a horse labouring under the disease?

Mr. Croxford.—I cannot offer an opinion on the subject, never having seen the experiment tried.

Mr. Dunn.—If the palpebræ or the cartilago-nictitans remains thickened after the inflammation set up by ophthalmia is removed, and interferes with the free action of the cartilago-nictitans over the eyes, would you object to taking off the thickened portion?

Mr. Croxford.—I never saw the cartilago-nictitans thickened, but if it were, perhaps, I should not object to the operation, provided it was to such an extent as to cause irritation. I would not, however, interfere with it, if it could be avoided. As I have stated in the Essay, I think it is an abuse to attempt its removal.

Mr. Dunn.—I have seen a piece taken off the size of a marble. It was the result of common inflammation. The horse was out at grass, and the inflammation ran so high that it left a thickening of the palpebræ, and on the cartilago-nictitans there was a substance left the size of a marble, so that he could not close his eyes within an inch. We took it off, and the horse got well; we also scarified the palpebræ, and they diminished in size, and the animal recovered.

Mr. Faulkner.—I should say that it was a morbid growth on the cartilago-nictitans, not the cartilago-nictitans itself. Mr. Dunn has alluded to the thickening of the palpebræ after chronic inflammation of the eyes. I would suggest that the compounds of iodine might be applied externally to produce an absorption of that thickening.

Mr. Hubbick.—I have seen morbid growths on the cartilago-nictitans removed in several cases from cattle and horses, but more especially from pigs. The latter have always done well; but if it be not removed it causes death, for the pig refuses to eat, and consequently dies of inanition. This disease has not been known more than four or five years, but there is not a farmer now in the county of Durham who has not had his pigs affected at one time or another. It has a red appearance, and extends along the entire breadth of the cartilago-nictitans, and is projected over the whole eye, assuming the shape of the nictitans membrane itself. It is provincially called *hawk*. A needle and thread are passed under it, and it is taken off with a pair of scissors. Generally the pigs do well after it; but the morbid growth has in some cases returned again. It produces much irritation of the eyes, and the tears flow in great abundance. Generally only one eye is affected, but sometimes both. If the excrescence is not removed, it causes death in a very short period. I have known it to occur in three weeks. They generally lose the use of their hind legs first from paralysis. The cartilago-nictitans is projected over the front of the eye; but I do not consider that there is blindness independent

of this cause, because, after removing the morbid growth, the sight appears perfect in a week or ten days. The paralysis of the hind extremities, I should say, arises from general debility. After they become very much affected, they lose the power of their hind extremities, and then pine away altogether. I cannot ascribe it to nervous influence; nor do I know how it is to be accounted for. It appears to be a morbid growth on the edge of the cartilago nictitans, inducing inflammation of the eye and much constitutional disturbance, evidenced by the loss of appetite, and ultimate death from starvation, for they do not take any thing to eat. The movement of the jaws is not particularly affected, but they do not appear inclined to eat. I suppose the pain is very severe, and the constitution sympathizes. I have seen it affect them at all ages, but the young ones are the principal sufferers.

Mr. Croxford.—In applying a preparation of iodine for tarsal ophthalmia, with friction, would not Mr. Faulkner be afraid of some injury happening to the conjunctiva?

Mr. Faulkner.—If too much at a time were used and a portion allowed to get between the lids, that might possibly be the case; but I think this might be guarded against by using it lightly, not taking much on the finger at a time, and rubbing that in before more is put on, taking care, also, that none was left for the horse to rub in himself between or under the eyelids. Mr. Morton was kind enough to suggest, at the opening of the meeting, the constitutional employment of iodine for the purpose of producing absorption of capsular cataract. Would he not rather apply it topically in a diluted form, putting it between the eyelids?

The Secretary.—No: I should endeavour to obtain the desired action by saturating the system with some of the compounds of iodine. Its external application in the form of ointment would certainly cause irritation; but the question is, if it would produce benefit. In the treatment of disease we are not to be over careful about the amount of irritation, but consider the benefit with which that irritation is likely to be accompanied. I should rather depend on the effects produced on the constitution than on topical applications of iodine. It is not like a thickening of the tarsi: there, I think, topical applications produce the greater benefit; but here we have disease deep seated, and the influence of any agent employed must be derived through the circulation. I know of no better way of charging the system than the mode usually pursued in mercurial salivation—friction, combined with the internal administration of the remedy; but, as the eye it a delicate organ, I should hesitate in having recourse to the former. I should, therefore, trust to the employment of the agent constitutionally.

With regard to the application of cold, as there is no external inflammation I cannot conceive that it would be beneficial. There is the presence of abnormal matter, of which we are desirous of promoting the absorption, and that, I think, may be effected through the agency of iodine on the system.

I have been asked, What is the difference in the composition of lenticular and capsular cataract? A question, I confess, that I cannot see any good would result from answering, and I am ready to confess my entire ignorance on that subject. I may, however, observe, in reference to that question by Mr. Smith, that lenticular cataract is frequently neither more nor less than the simple derangement of the order in which the layers of the lens are naturally arranged: but in capsular cataract there is a deposition of morbid matter on the capsule. I should think, therefore, that in the composition of the two there is little or no difference: perhaps there may be a little more albumen effused in one case than in the other. It is true that I have seen cases in which the lens has become cartilaginous, and sometimes bony spiculæ have been thrown out into it.

Mr. Cartwright.—About a fortnight ago I accidentally met with a case of ossification in the eye of a donkey. The sclerotic coat appeared healthy, except that a circle of bone existed near to the optic nerve. There did not appear to be disorganization in any other part of the eye. What produced the disease I cannot say, or whether it interfered with vision.

Mr. Wardle.—Of what strength would Mr. Faulkner apply the hydriodate of potassa to the eye; and would it not be more justifiable to put the system under the influence of iodine than to employ an external application in the first instance?

Mr. Faulkner.—I should first try half a drachm of the salt to an ounce of lard; but where the disease is recent, I think it might be removed by getting the eyelids under the influence of the topical application without going through the long and tedious course of impregnating the constitution with the remedy.

MARCH 31, 1840.

Mr. E. S. Gray, V.P., in the Chair.

The following Essay, by Mr. F. Fox, was read.

ON ENTERITIS IN THE DOG.

Gentlemen,—I beg to submit to your consideration a few remarks on a disorder which not unfrequently comes under the cognizance of the veterinary surgeon. The affection to which I allude is termed *Enteritis*, or Inflammation of the Intestines. At present, it is my purpose to confine my observations to those forms of it which are most commonly met with in the *Domestic Dog*. I may, perhaps, be allowed to premise, that the paper I have now the honour of laying before you is the first of the kind I have ever been engaged in; and I cannot, therefore, but feel much diffidence in the attempt, and much anxiety respecting its fate; but you are at all times ready and willing to regard the novice with much forbearance and great indulgence.

My experience of the diseases to which dogs are subject is but of limited extent; and I have selected this one in particular in the expectation that, by discussion, it will be productive of much useful information, not only to myself (for I must confess my feeling in the matter is so far selfish), but also to other students in veterinary science, who may be present.

Enteritis, or inflammation of the intestines, is a disorder to which dogs are very liable, and it may be produced by the action of several causes. It is said that the intestines of dogs are peculiarly irritable, and are extremely subject to take on inflammatory action, and doubtless this tendency may be much increased by the artificial mode of life which they lead. Hence, so far as my ob-

servation extends, it has been a very general complaint amongst those dogs that are much petted, and accustomed to what may be called, for them, the *unnatural comforts* of good fires and warmed apartments, rather than the stable or dog-kennel. It is obvious that this mode of living renders them much more sensitive to variations of temperature; and it is found that cold, more especially when combined with damp, is one of the most common causes of that inflammatory affection of the bowels of dogs which has been called *spontaneous*.

Rheumatism also is a very common cause of enteritis, and the connexion between these disorders has been observed to exist in the dog alone. It has been said that, in this animal, acute rheumatism is always accompanied, more or less, by enteritis; and in the chronic form, also, there is always some degree of it present: the existence of a rheumatic affection in some other part of the body will lead us to infer what is the true cause of this form of the complaint.

In the spontaneous inflammation of the bowels, or that arising from the effects of cold or damp, the symptoms are very acute, even at the onset of the disorder.

There is considerable fever present, indicated by great heat, thirst, loss of appetite, panting, and restlessness. There is much tenderness of the belly on pressure being made. The irritation of the stomach is such as to keep up almost constant vomiting. The eyes appear red and inflamed; and the mouth and nose are alternately hot and cold. The countenance is expressive of anxiety; the pulse very quick and small; and the animal appears to derive comfort from lying on its stomach on any cold surface, as flagstones. And he expresses his pain by much moaning, particularly on moving.

The bowels are, in most instances, costive, although there is often frequent discharge of a blackish and extremely offensive matter, which, however, does not consist of fæces, but appears to be chiefly composed of unhealthy mucus.

The cases which I have seen of this spontaneous inflammation of the bowels occurred in rather large dogs; and, the symptoms being urgent, I found that free bleeding in the first instance, with a full dose of calomel, about six or eight grains, immediately afterwards, and a dose of castor oil, administered about six hours after the calomel, have been very effectual means in removing the disorder. To this I added, and, apparently, with much ease and comfort to the patients, frequent injections of warm water.

There is another form of inflammation of the bowels which has been called *bilious*, from the circumstance of an undue quantity and unhealthy kind of bile being poured into the intestines, irritat-

ing them, and exciting an inflammatory action of their mucous surface.

In this form of the disorder the matters thrown up from the stomach are either of a black or yellow colour, and very offensive; and the alvine evacuations partake of the same character, while at the same time they are very frequent. It is said that the action of mineral poisonous substances is such as frequently to produce repeated evacuations, bearing considerable likeness to those dejections which follow an attack of this bilious enteritis; but in inflammation from mineral poisons the vomitings are incessant, and usually frothy and streaked with blood; the mouth swells and emits an offensive odour; and the evacuations are more bloody and much less tinged with dark bile. This kind of inflammation is attended with an insatiable thirst, which is not generally the case with that arising from impure bile.

The best medicine in this form of the complaint—so far as my experience extends—is a mild purgative, such as castor oil, for example; and if there is much blood passed, and great pain, it may be proper to administer some laudanum, perhaps thirty to sixty drops, according to the size of the patient. I must, however, observe, that I have seen very little of this form of the complaint.

There is yet another form of inflammation of the intestines, arising from costiveness, or an obstruction by some foreign body, which I have so frequently observed as to lead me to the conclusion that it is by far the most common kind.

Obstructions may exist in any part of the intestinal canal, and these may be of various kinds. Mr. Blaine mentions a case where an obstruction existed in a portion of the jejunum, occasioned by a cork that had been brutally forced down the throat of the animal; and in another instance, the splinter of a chicken-bone had become embedded in the substance of one of the intestines, and thus formed an insurmountable obstruction to the passage of the fæces. Needles and pins have sometimes induced fatal obstructions by getting across the bowels.

It is plain that any substance not capable of being digested may be the cause of inflammation of the intestines, if it remains for any length of time in them. Calculi also have been found, composed of accumulations of fæces around hair, which the animal had swallowed. Intussusception also now and then occurs, in which one portion of the intestines gets folded within another, and thus forms a complete interruption to the passage of the fæces. The most common cause, however, of obstruction, and hence of inflammation, is *costiveness*, and this may exist to such a degree that nothing will pass through the animal; or it may happen, that from the irri-

tating presence of the accumulated and hardened fæces; there may be a greatly increased secretion of mucus, which is discharged frequently, by only a few drops at a time, and accompanied with much straining.

This mucous discharge may be more or less tinged with bile, or, being mixed with some feculent matter, and bearing some resemblance to real evacuations, may, at first, lead to the belief of these being rather the indications of the bilious form of enteritis; but it may be distinguished by the difference of the coming on of the attack.

At first, the symptoms observable are, want of activity and spirits—an appearance of general uneasiness, and frequent ineffectual efforts to expel the contents of the intestines. The appetite may or may not be materially affected. In some cases, I have thought it, at the beginning of the attack, to be rather increased than diminished. These symptoms may exist for two or three, or even more days, before the symptoms of inflammation decidedly set in; the whole attack, however, being gradually progressive. The belly now becomes hot, and evidently tender on pressure being made—the efforts to expel the fæces are more frequent, and accompanied with a greater degree of pain, the animal often moaning piteously; while the thirst, which before was inconsiderable, is now much increased: there is also more or less sickness.

The fæces are usually retained in the upper part of the rectum, and may generally be felt distinctly by the finger being passed up the bowels; but in one case—a large Newfoundland dog belonging to a relative of mine—I could only ascertain the presence of a hardened collection of fæces by passing up several inches of an elastic gum tube—part of the injecting syringe which I was using. In this case, the sensation communicated to the hand was similar to that produced by striking against a stone, so compact had the fæces become.

The treatment for such cases as these has hitherto been with me extremely simple. My first endeavour has been to empty the bowels by the finger, or the handle of a spoon, so far as practicable; and, next, to give frequent and copious injections of warm water, so as to soften and partially dissolve the mass; and also so to dilate the bowels as to offer a much easier passage on the animal's succeeding efforts at expulsion. After these measures, I have given a dose of calomel, followed by one of castor oil; and when there has been any indication of tenderness of the abdomen, I have seen good result from the abstraction of blood, so as to make an impression on the system: to these measures (when convenient) I have added the warm bath. The diet, in all the forms of enteritis, should consist of slops.

Where there is decided tenderness of the belly, I should recommend the application of a blister, or some stimulating embrocation, over the whole of it; but I should not call these measures into operation until *after* the abstraction of blood and the employment of injections, for it might be needlessly inflicting pain upon the animal, and would, perhaps, tend rather to increase than lessen the irritation of the parts. The sulphate of magnesia may be given with advantage; and, often, when the castor oil cannot be retained on the stomach, small doses of opium, as a quarter of a grain, combined with three or four grains of calomel, may, in some cases, be given every six hours, in conjunction with the other remedial means. But I should not employ the drastic purgatives, as aloes or croton oil, since I cannot but think they would tend greatly to increase the irritability and inflamed condition of the canal. They have, however, been strongly recommended, and in some recent cases would, I have no doubt, be useful, but I have never had occasion to employ them.

Mr. Dunn.—In the detraction of blood we must, of course, be governed by the size and breed of the animal, as well as the disease under which he is labouring. The quantity withdrawn will vary from four to ten ounces. In this disease, to which the attention of the Members has been drawn by Mr. Fox, I have found the bowels to be more easily acted upon by purgative agents than during health. This, perhaps, may be accounted for by a reference to the irritable state of the alimentary tube when inflamed.

In one case which has fallen under my notice, I found violent inflammation pervading the whole of the intestines; but the mucous coat was separated from the muscular, and hung in shreds: the ileum was also ulcerated.

Mr. Cresswell.—In bowel affections, and particularly when super-purgation is present, prolapsus ani is by no means uncommon in the dog. We were in the habit of returning the gut, and then throwing up an opiate enema. When, however, the bowels were not in a relaxed state, we exhibited castor oil in combination with opium after replacing the intestine. I have observed that a return of the protrusion is very common. Fox-hounds and pointers appear to be most frequently the subjects of it.

Mr. Hubbick.—Worms are by no means an uncommon cause of inflammation of the bowels in dogs. On examination after death I have found immense numbers of these parasites both in the small and large intestines. They necessarily create considerable irritation, which is followed by inflammation. Various are the remedies resorted to for expelling them.

Mr. Sibbald had employed powdered flint-glass for the purpose, and successfully.

The Secretary.—Anthelmintics may be classed under two heads, mechanical and vital agents. The mechanical are, powdered glass, granulated tin, the down of cowage, &c. The vital have reference to action, either upon the worms themselves or the tissues in which they are nidulating. Their influence may be either by immediate contact or through the medium of the circulation. We have instances of these in the extirpation of worms from the alimentary tube, and their destruction in other parts by certain medicaments administered, as the essential oil of turpentine for flukes in the biliary ducts, and the use of lime-water and solution of salt, as recommended by Mr. Mayer, for filaria in the bronchi.

The object of an ordinary anthelmintic is to dislodge the parasite, and then cause its expulsion from the intestines. This, perhaps, is best effected by an active purgative. For this purpose, in the dog, large doses of salt have been given until the stomach has no longer rejected it, or powdered glass, as stated by Mr. Sibbald, which acts as a mechanical irritant. The quantity not being a matter of much moment, as it is an agent not taken up into the circulation. Perhaps from ʒss to ʒj may be given, varying, of course, with the size of the patient.

Mr. Dunn had tried various remedies for fox-hounds, especially young ones, when affected with worms, and had never found any thing answer so well as common olive oil given in large doses. Nearly one-half of the puppies suffer from these tormentors.

Mr. Fox.—The diagnosis of enteritis in the dog may be thought not dissimilar to the same disease in the horse. We have a full and wiry pulse, hurried breathing, tympanic abdomen, the nose and ears alternately hot and cold, and often obstinate torpor of the bowels. The irritable state of the stomach frequently causes a rejection of its contents, and persons suspect that some deleterious agent has been administered, and proceed to give emetics, which tend to make the matter worse. For this purpose salt is a very common agent, which, although it quickly empties the stomach, occasions much frothy discharge from the mouth. The best emetic is tartarized antimony. The kind of dogs I have found most disposed to these bowel affections are those which are petted and kept in a state of artificial and unnatural warmth. In them enteritis is usually preceded by a derangement in the function of the liver. The alternations of heat and cold, which so frequently are productive of rheumatism, will in the dog often give rise to enteritis. Suddenly plunging an animal into water while in a state of profuse perspiration would also be very likely to produce inflammation of the bowels, by causing a determination of an undue quantity of blood to these viscera.

The remedial measures must be promptly resorted to, and active counter-irritants employed. On this account I have recommended a blister: the essential oil of turpentine diluted with oil, or a mustard poultice, may be also employed.

Mr. Faulkner had found the mustard poultice highly beneficial in cases of visceral inflammation, the amount of counter-irritation induced by it being great, and quickly brought about.

Mr. Cresswell had seen it cause the removal of the hair, and he thought we ought to be very cautious in having recourse to it.

Mr. Evison.—Huntsmen had informed him that frequently they have thrown dogs into water when perspiring without any ill consequences supervening. He had seen hounds in full cry go through a river without any injury, killing the fox on the opposite side.

Mr. Smith.—In instances of obstinate constipation of the bowels, so frequently attendant on inflammation of those organs, he had given croton oil with advantage. In one case, to a large Newfoundland dog he gave four drops. He had also given large doses of calomel, as much as fifteen grains, combining it with opium; nor should he hesitate to repeat this dose when the bowels were torpid. He had exhibited calomel in scruple doses in cases of spasmodic colic, or something simulating it.

Mr. Sibbald deprecated the employment of such large doses. He had found a single grain productive of powerful action. He could not conceive how, if a mechanical obstruction was the cause, these quantities could cause its dislodgement.

Mr. Sayer considered that the diseases of the dog well deserved the attention of veterinarians. He was, however, conscious that his experience had

been too limited to render observations of his of much value to the Members; nevertheless, reflecting on the principles on which the Association was based, namely, the accumulation of authentic facts relating to veterinary science, he would relate two cases which had fallen under his care, and of which he had recorded the particulars in his note-book.

The first case is congestion of the lungs.

A greyhound, about two years and a half old, that had been engaged in a severe course about four hours previous to the development of the following symptoms, viz. shivering and intense coldness of the surface, especially of the head, neck, and anterior extremities, succeeded in a short time by considerable increase of temperature of the skin, dryness of the mouth and nostrils, redness and distention of the vessels of the tunica conjunctiva—full, rapid, and tumultuous action of the heart and arteries—great restlessness—considerable tenderness, and evincing pain on pressing the abdomen.

Treatment.—I abstracted about ʒvj of blood from the jugular vein, and administered with the stomach pump the following mixture: syrupus rhamni ʒss, ol. ricini ʒij, thick gruel ʒij, and an enema of warm water. This appeared to afford him some relief, producing considerable cessation of pain, and less restlessness; but in about four hours, when I again saw him, the pain and restlessness had again made their appearance; great dulness was evinced, the animal taking little notice of those persons whom he was in the daily habit of seeing, and refusing his food. As the bowels had not responded. I ordered him hydrarg. chlorid. five grains in thick gruel, and repeated the fomentations to the abdomen. On the following morning, when I again saw him, the pain and anxiety appeared much increased—distressing sickness had been present during the night—pulse excessively rapid—respiration hurried, and extremities cold and feeble. I repeated the bleeding, and as the bowels had not been moved, I also repeated the calomel and syrup of buckthorn: fomentations also were continued, and the enema of warm water repeated. About six hours afterwards he became greatly altered: the ears, mouth, and extremities were cold, there was excessive general prostration, and the pulse was weak, irregular, and intermittent—the respiration laborious, accompanied with frequent moanings. He was kept quiet, and death terminated his suffering in about two hours. I much regret that a post-mortem examination was obstinately refused, on account of the animal being a great favourite of the owner.

ENTERITIS.

The second case is that of a valuable pointer dog, who had been attacked with severe shiverings three or four days previous to my seeing him. The symptoms, however, when I saw him, were as follows:—pulse full. hard, and rapid, mouth hot and dry—extremities and ears cold, but the rest of the body maintaining its natural warmth—eyes suffused, and discharging a glutinous secretion—breathing little disturbed—body tender and painful on pressure—bowels obstinately costive.

Treatment.—I bled him to ʒviij, and gave syrup. rhamni ʒiij, ol. ricini ʒij, tinct. opii gtt. 50. A warm enema of ʒij neats' foot oil and gruel was applied, bandages were placed on the extremities, and fomentations of the body repeated.

The bowels were slightly acted upon in about six hours, when the enema was repeated, and the fomentations continued: there was now some mucus discharged from the mouth: but he was perfectly quiet, and able to lap some milk.

On the following morning I found that the bowels had been freely relieved during the night. The pulse was less frequent, the ears and extremities of

nearly their natural temperature, and, indeed, he appeared considerably better. Mutton broth was now given to him *ad libitum;* flannel bandages applied to the body; medicine discontinued, and in four days he was perfectly recovered.

Mr. Cartwright.—Mr. Fox has quoted a case from Blaine, in which enteritis was produced from the presence of a cork in the intestines. I was called in to a similar case in a greyhound belonging to Lord Kenyon. The dog had swallowed the cork of a soda water bottle, and it produced excessive inflammation of the bowels. It had proceeded half the course of the intestines; but it then got into a narrow part through which it could not be forced. I did not see the animal alive; but that was the cause of his death. I am not aware that any treatment had been adopted. It was at first thought that the dog had been poisoned. The inflammation was general, and very severe indeed. The gastric juice appeared to have had no action on the cork. There are some vegetable substances over which it has little or no power, and cork is one; the siliceous matter of the stems of the grasses and the husk of grain is another, and hence the reason why grains will often pass through a horse without being acted on, and afterwards germinate. It is a common practice in the country to poison dogs with cork. It produces inflammation by the mechanical obstruction it occasions.

Mr. Dunn mentioned a case of enteritis where he thought a portion of the mucous membrane was separated from the muscular coat. Was it not rather a thickened secretion of the part, such as we often find in horses and other animals?

Mr. Dunn.—I think not; it hung in threads, as I have said, and I traced it on to a part where it was quite natural.

The President.—I have read the Essay which has been introduced to-night with considerable pleasure, and, like the generality of papers laid before the Association this session, it treats on an interesting subject; one worthy the consideration of the members. It has not only convinced me of the great importance to be attached to the investigation of the anatomy and physiology of all animals preparatory to our attempts to prescribe for the sufferings under which they may labour, but the discussion which has taken place has more fully impressed that fact on my mind. When speaking of carnivorous animals, it must be borne particularly in mind that their alimentary tube differs widely both in structure and arrangement from that of the horse and ruminants generally; and, consequently, we must expect that the medicinal agents necessary to be employed for the purpose of combatting the affections to which they are liable must also be widely different: for, although we should reason from analogy with great caution, yet we have a right thus to reason, unless practical experience has taught us that analogy would here fail us. When we find in one animal a certain viscus or part precisely resembling that which we meet with in another, we may be pardoned in assuming that the same medicines will have a corresponding effect in each case; experience, however, will convince us that the assumption is not in all cases correct.

Now, in carnivorous animals the alimentary canal, as I have intimated, is much more simple than in ruminants. I have heard gentlemen to-night speak of the large and small intestines of the dog. The term large and small intestines is applied by veterinary surgeons, with some degree of reason and propriety, to the animals which they are most commonly called upon to treat, as the horse or the ruminant—one part of the intestinal tube being very small compared with the other portion: but such is not the case in the dog, and many other carnivorous animals. There is an interruption to the tube, it is true, by the cæcum; but the intestines throughout bear a near resemblance to each other, not only in form and figure, but also in general size.

With reference to the disease which forms the subject of the present Essay—Enteritis—I differ from the author in opinion that the dog is susceptible of this affection spontaneously. In the whole of my practice among carnivorous animals, I do not know that I ever met with an instance of enteritis arising from causes which we know produce the disease in other animals; such as transition from one temperature to another, or immersion in cold water during the state of activity in the vascular system consequent upon exertion. I have repeatedly seen the dog exposed to this, but without its producing enteritis. That the dog is very frequently the subject of attacks of inflammation in some part of the intestinal tube is perfectly true; and I believe that the author of the Essay is correct when he says that these attacks more generally arise from constipation, or some obstructing agent of an indigestible character swallowed by the animal, than from any other source.

There is, however, another common cause of inflammation in the anterior part of the intestinal tube, and in which also the stomach is almost invariably involved—and that is referrible to a primary affection of the liver, and an increased secretion of bile poured into the alimentary tube. Anti-peristaltic action takes place, and I have known a dog eject bile from the stomach. Where inflammation of the intestines is referrible to an hepatic affection, it is generally confined to the anterior part of the tube; but where it arises from constipation, the inflammatory action more frequently exists posterior to the cæcum.

The symptoms, as stated by Mr. Fox, are clear, so far as inflammatory action is evinced by a hot and dry nose, a quick and wiry pulse, and pain on pressure of the abdomen. Where the stomach is involved, the animal presses that organ by lying on the cold flags, or elsewhere; but when the disease arises from constipation, by pressing the abdomen at certain parts, you find one portion

more tender than another, and that is the part where the obstruction generally exists.

The two affections require very different treatment. The one, arising from constipation attacking the lower bowels principally, may be combatted most successfully by the simple use of an enema. The benefit resulting from it is astonishing. I have employed Read's pump, and have been led to suppose that the fluid injected has extended as far up the intestine as the cæcum. We cannot do this to the same extent in the horse. I have relieved many animals from constipation, and consequently from death, which would subsequently have taken place from inflammation in that part where the foreign agent was fixed, by means of an enema; but I should also deem it advisable to administer a purgative. Of what would that consist? Calomel? Certainly not! I was surprised, on perusing the Essay, to find that the author said he would administer calomel to the extent of from five to ten grains. The impression on my mind was, that this was a powerful dose to give to a dog; but, in the course of the discussion, I heard one gentleman say, that he should not hesitate to exhibit a scruple. Calomel should be given to a dog, and to all carnivorous animals, with the greatest caution. I should never think of exhibiting it as a cathartic. I should only administer it in small doses, and that for the purpose of producing the specific effect on the liver which we know to be the peculiar property of this drug. Given in such doses as have been spoken of to-night, it would, to a certainty, produce vomition; at least, I never could believe that it would be retained unless I saw it; but if it got into the intestines it would act as a powerful drastic purgative.

Some persons have said that they would avoid such a drastic purgative as aloes; but it is the most valuable purge that can be given. I should not hesitate to exhibit a drachm, or even two drachms; whereas, to the same animals, I should with the greatest caution administer two or three grains of calomel. It is fortunate for the dog that nature has constructed his stomach so as to reject that which would be poisonous if it passed into the system; and thus it is that he avoids being destroyed by those doses of calomel which I have known surgeons and chemists give to these animals.

Mr. Sibbald has observed, that he had purged a dog with a grain of calomel. I have frequently known that to be the case when it was combined with a grain of tartar emetic. I have repeatedly purged a lion with two grains of calomel and two of tartar emetic. Some persons, when speaking of the quantity of calomel proper to be given to a lion, have said, "I suppose you exhibit two or three drachms;" estimating, I imagine, the strength of the dose to be

given by the animal possessing four paws, instead of considering the structure of which he is composed, and his susceptibility of being acted upon by a medicinal agent.

I think that calomel should only be given to dogs in those cases of enteritis which we consider referrible to a primary attack of the liver; and then it should be exhibited with great caution, in small doses not exceeding one, two, or to the utmost three, grains. That is my opinion, an opinion formed on practical experience, and in accordance with that of others who have preceded me, and whose means of observation have been tenfold greater than my own. This cannot be too much impressed on the minds of young men who are about to practise on animals. The purgative I should give in enteritis would be oil combined with aloes or salt, which is an excellent medicine in such cases.

With regard to indigestible materials which may be swallowed by these animals, it is a well known fact, that food taken by carnivorous animals is retained for a long period; and therefore we may presume that such matters taken by them would be less likely to pass undigested than if swallowed by others in whom the digestive process is performed more quickly. Thus it is that dogs will eat with impunity food which to other animals would be perfectly indigestible. But it has been correctly stated, there are many things on which the gastric juice will act but very slightly. It is not uncommon for dogs to swallow such things as even by their stomachs are indigestible, and these cause inflammation of that part of the canal in which they lodge. But these are not affections which we should term enteritis; they are inflammations of a particular part of the tube, arising from the obstruction occasioned by a foreign agent which is fixed there.

Intus-susception is another disease not uncommon to the dog. It is indicated by vomition, anti-peristaltic action, and pain on pressure of the abdomen.

I am, therefore, of opinion, that in the treatment of intestinal disease we should mark well the symptoms in order to ascertain whether it arises from primary attack on the liver or from constipation, and we should apply our remedies accordingly. The warm bath is an excellent remedial measure to adopt in such cases, combined with a clyster and oleaginous purgatives.

APRIL 7, 1840.

The President in the Chair.

The following works were directed to be added to the Library :—

The Bridgwater Treatises to be perfected.
Sir A. P. Cooper on the Anatomy of the Breast.
Professor Owen on the Comparative Anatomy of the Teeth.
Bracy Clark on the Navicular Bone.
British and Foreign Medical Quarterly Review, and the Medical Gazette, to be taken in as published.

The following letter from Mr. Mogford, of Guernsey, addressed to the President, and which accompanied a specimen of intussusception in a cow, was read :—

Guernsey, March 13, 1840.

Dear Sir,—It gladdens my heart, more than I can express, to see you have taken into consideration the much neglected, barbarously, and ignorantly treated quadrupeds of other species, as well as the horse, particularly the cow. I do most heartily wish you every success, and hope that the country practitioners will send you a correct statement, from time to time, of the result of their practice. It is by such means as these that a rational and judicious practice can be established.

Anxious to contribute my part, I have sent you an intercepted intestine, which I took from one of the Queen's cows a few days ago. It will tell its own story. It is, as you well know, by no means an uncommon thing; I, myself, have met with it before. The reason that it is not more known, I venture to suggest, is, because the post-mortem examinations are not sufficiently attended to. Permit me to say, Sir, that I the more warmly hail your appointment, from the conviction that you will impress it on the minds of your pupils, that, with all the knowledge of anatomy which they can acquire with so much advantage at the College, they never can arrive at an honourable and successful practice without an habitual regard to the lesions produced by disease.

If not obtrusive, and the fruit of a somewhat lengthened experience in the diseases of cattle be in any way acceptable to you, I shall be proud, by way of confirmation or illustration of particular facts, to place at your disposal any records of disease which I may possess.

The President.—The preparation which now lies before us is principally interesting, as being taken from a ruminant, and as being a specimen of a comparatively rare disease in that animal.

Prior to this session, we have not been in the habit of investigating, to any extent, the diseases of these animals. It appears to me to be a case of intus-susception of one of the smaller intestines; and although Mr. Mogford has not stated the particular part of the tube from which it was taken, yet I have little doubt that it is the termination of the ileum in the cæcum. It is quite evident that one portion is inverted; and, on examining the part which it overlaps, I find it to be perfectly firm: in fact, a scirrhous tumour exists there. There was an impediment to the free passage of the aliment, arising from scirrhous tumefaction formed outside the intestine; the consequence of which was, that the peristaltic action, when excited, caused the ileo-cæcic valve to yield, and the ileac termination protruded itself into the cæcum. This impediment to the transit of the aliment occurs even previous to inversion taking place; but the passage must have been materially constricted by the pressure of the tumour formed on the outer surface.

These morbid specimens are often very remarkable, from the proof they afford of their chronic nature. Although the intestinal tube may be much constricted by their presence, still, during the period that the disease exists in this chronic form, life is supported. A sufficient portion of aliment passes through the canal to carry on the functions of the digestive system. But, as soon as the gut became intus-suscepted, the constriction was rendered complete, inflammation immediately supervened, and I have no doubt this was succeeded by sphacelus of the tube, to which the death of the animal necessarily ensued.

Mr. Cartwright.—The only case I ever saw is recorded in one of the numbers of THE VETERINARIAN. It occurred in a calf. I have opened some hundreds of cows, but I never met with an instance of it in them.

The following Thesis, by Mr. SIBBALD, was then read:—

ON INFLAMMATION.

Gentlemen,—In thus producing my first bantling before you, I confess that I feel rather anxious as to the reception which it may experience. It is a favourite child, and should I occasionally seem to outstep the bounds of sober reason, you will know, and, I trust, forgive the cause. Still I ask not for your acquiescence, unless your minds are satisfied as to the correctness of my reasoning. I shall be perfectly satisfied when any wild fancies of mine are ar-

rested by stubborn facts. However uncongenial to our feelings may be the dissipation of cherished theories, yet we act most wisely when we unhesitatingly yield to the voice of truth. "It is not a little remarkable," says a continental teacher, "that at a period when the *positive* is sought in every quarter, the study of a science so important as medicine should be the only one characterized by uncertainty and chance. Be it ours to strike out a new path.—The *effects* of diseases have long been studied; let us search for their *causes*, and, this done, we perhaps shall be enabled successfully to modify their injurious effects." Thus premising, I proceed to my subject.

Inflammation, as it is termed, may be divided into two classes,—that of which we can take immediate cognizance, or which in other words, we can see and feel; and that which we can only recognize from certain symptoms, that, from experience, we know, denote its existence.

Inflammation of the external parts is denoted by tumefaction, increased heat, and, as we may fairly infer—for our patients are unable orally to inform us—pain.

The proximate cause of the swelling is a partial obstruction of some of the capillaries. The blood which should have passed through these vessels regurgitates into the neighbouring tubes. Those tubes receiving more than their usual quantity of fluid are distended—from their unusual distention their pores are widened; either blood itself, or some of its constituents, escapes into the adjacent tissue—there it coagulates, and, in its turn, becomes a source of obstruction. Thus it extends to a greater or less degree around the original injury.

What is the first cause of all this? It may arise from mechanical injury, as the pressure of a nail on the very vascular structure within the hoof—from the extraordinary and undue use of parts, as in spavin—from extensive lesions in the form of wounds; or without any assignable cause, as in the enormous tumefaction of one of the hind extremities of our draught horses. All these deviations from nature put on different appearances, and may terminate in different ways, as will be hereafter considered.

The *increased temperature* of the part may be accounted for by the fact, that more blood circulates through the neighbouring vessels, and animal heat is contained in and derived from the circulatory fluid.

Mr. Hunter, however, found, by experiments on various animals, that the actual increase of heat was but a few degrees; and, indeed, there is no more blood sent to the part from the heart, but it has to force its way through fewer or more diminished canals than it is accustomed to.

I mentioned *pain*, or a sensation of disordered action, as being experienced in inflammation. When the vessels are distended, and effusion is taking place into the surrounding tissues, pressure must be exercised upon the nerves, and the feeling of pain is transmitted to the sensorium.

I will now proceed to the other class of so-called inflammations; but here allow me to remark, that I lay no claim to originality in accounting for these causes of disease. They are but the opinions of others, presented, perchance, for the first time to you. If I may be able to dissipate only a small portion of that mist which, even at the present day, hangs over the physiology of the animal frame, I shall not have taken up the pen in vain.

It will be necessary briefly to revert to the composition of the blood, and the nature of the tubes by means of which it is transmitted to various parts of the system.

It will be sufficient for my present purpose to say, that the blood is composed of fibrine and albumen, together with various salts, acids, &c.—that it holds in suspension myriads of small particles, or globules—that it is propelled by an organ called the heart into large tubes denominated arteries—and that these tubes decrease in caliber towards their ultimate ramifications, and are then designated capillaries; but so infinitely minute are they, that they bear no comparison even to a hair. Passing through these, the blood gradually makes its way into tubes increasing in diameter, and by means of these it returns again to the heart. These tubes are exceedingly elastic and will admit of being considerably distended without rupture. The tissues of which they are composed are also porous, as may be demonstrated by the absorption of a poison placed on the external tissue of an artery or vein.

On the abstraction of one of the constituents of the blood, that fluid will exude through the walls of its ducts. This constituent, which is the same that causes the coagulation of the blood when removed from its vessels, is fibrine. It is that substance commonly called the buff of the blood. The condition of this substance is also modified by the action of various chemical agents which prevent or increase its coagulability.

The vessels being porous, it is consequently necessary that the blood should possess a certain degree of viscidity, in order that its exudation through the parietes of these vessels should be prevented.

This being the case, we have a clue to some of the causes of inflammation. When we consider the vast variety of substances which, acting on the blood, may modify this viscidity, we shall not be surprised at the numerous catalogue of diseases, or, if you will, inflammations, which we are called upon to relieve.

Let us glance at the diseases of the lungs—organs which, of all others, are most susceptible of being disordered—organs through which the whole of the blood passes, and the minuteness and tenuity of whose tubes are such that the atmospheric air is brought almost into contact with their contents. Remembering, too, that through tubes like these the small globular bodies which I have before mentioned are continually passing, can there be any surprise at the trifling causes which operate in disordering their functions?

In these diseases we have increased difficulty of breathing, coldness of the extremities, and injection of the mucous membrane of the air passages. The pulse also is accelerated to such a degree, that it is almost imperceptible at the jaw; but the heart is bounding on, endeavouring to make up, by the rapidity of its ejections, for the want of fluid to act upon, which is the necessary consequence of its obstructed passage through the lungs. Let but a trifling obstruction occur in any of the capillaries of these organs, and how soon, from their numberless anastomoses, will it spread, and the system become affected! Our internal organs cannot long remain interrupted in their functions without the constitution of the blood being modified, and it is necessary for that fluid to be perfect, in order that it may circulate freely in its vessels; for, consequent on its obstruction or modification, we have developed that Cerberus of disease falsely denominated inflammation.

I have said that increased viscidity of the blood will cause obstruction. The affinity of the globules is increased, and they adhere either to each other or the parietes of the tube.

The two extremities of temperature also play a conspicuous part in the production of inflammation. Intense cold constricts the walls of the vessels, and interrupts the free circulation of the blood; while, on the contrary, heat causes the heart to contract more rapidly, and, consequently, accelerates the motion of the circulatory fluid.

It will thus be seen that the immediate causes of inflammation are referred to an alteration in the constitution of the blood by some one of these morbid phenomena. Some of our most eminent physiologists, however, have accounted for it, or, rather, have not accounted for it at all, by attributing vitality both to the vessels and their contents.

In a work published during the present century, I find the following sentence:—"The arteries are not mere mechanical tubes for the transmission of the blood to the various parts of the body: they possess, besides their elasticity, a vital power of action, arising from their muscular structure."

I cannot possibly agree with the opinions of this author. If you take a portion of an artery from a dead animal, and then distend it

to its utmost with fluid, and place a ligature on each extremity, on puncturing its parietes the contained fluid will rush out. Where, I would ask, is the vital power which stimulates it to contract on its contents? for surely, if an artery has a muscular structure—a fact which is far from being satisfactorily proved—it would be the first muscular structure that ever contracted, independent of nervous influence. Its elasticity alone is the cause of this; and were you to make use of an India-rubber tube—a substance which could never have been endowed with the gift of vitality—you would have the same result.

The celebrated John Hunter believed that the blood itself had life, and that it was possessed of an inherent principle, which he termed *materia vitæ diffusæ*.

I am not one of his disciples. I believe, with the eminent physiologist whose opinions have furnished matter for this thesis, that the blood is nothing more than a fluid chemically composed; its component parts being the bases of the animal frame, which is continually enlarging or altering; and that it is renovated and fitted for these purposes by the processes of alimentation and respiration. Viewing, then, the delicate and beautiful formation of that frame, I cannot conceive it necessary to call in the aid of vitality in order to account for its various disorders.

I have yet a few remarks to make on Fever. "That Fever is a disease sui generis, having a specific character not altogether dependent on the heightened action of the vascular system which it creates, is pretty well acknowledged, and tolerably easily proved." Such was the opinion of our forefathers, and such the opinion of many at the present day.

I would ask, Is it a fact that fever creates an excitation of the vascular system, or, rather, does not disorder of that system constitute the affection denominated fever? How many cases have I seen, in which the animal had lost his appetite—the mouth was parched—the eyes dull and languid—and yet scarcely any appreciable alteration in the pulse. There is no vital influence in this. It is simply a disordered state of the vessels of the intestinal canal, which, from over-exertion of their functions, have become partially unable to perform these functions correctly; and thus, the blood, not being properly resuscitated, is unable duly to give off its secretions. Give a smart purge, and all will be well. Fever is often produced by various misasmata carried into the system by the pulmonary circulation. It is easy to conceive what will be the result,—chemical action upon the fibrine followed by effusion into the parenchyma of the various organs: and this is almost invariably the case.

The sequelæ to the alterations in the constitution of the blood

next demand consideration. At the head of the list stands RESOLUTION. When the animal gradually recovers, and returns to his former habits without any alteration in structure or functions of the part or parts that have been affected, we say that his disease has terminated in resolution. The modus operandi is as follows:—The globules, which have been obstructed or stopped in their course either from the removal of the exciting cause or the use of remedial agents, resume the even tenour of their way: whatever has been effused is again received into the circulation, and thus no trace of disease remains.

This is resolution in its completest form; but it may not all pass away so easily—the effused materials may not re-enter the circulation. These materials also differ in their character, according to the function which the part performs whence the effusion has taken place, and the primary cause of the disease. Take the pleurae as an illustration;—the effusion from it is sometimes serous, producing water in the chest—sometimes the fibrine itself escapes, and adhesion takes place between the lung and the parietes of the thorax.

Some physiologists affirm that this is caused by a difference in the degree of inflammation, and that, when effusion of serosity takes place, it has been more violent. They might as well go a little farther, and tell us that their lymphatics had been kind enough to bring the water for the purpose of extinguishing the flame. The most rational mode of accounting for this will be found in the various causes of disease which I have already mentioned.

There is a modification of inflammation which has been termed INDURATION, but I do not think that there can be thickening of any part without primary effusion. In this case the effused material becomes organized, and constitutes a part of the frame.

Occasionally the original seat of obstruction will recover, while a distant part becomes dangerously affected. This is called METASTASIS of inflammation. The only illustration of this extraordinary change which has fallen under my notice has been from the vascular lamellæ of the foot. That these parts should be attacked by disease is not surprising, inasmuch as the distance from the central organ and the obstructions which are offered to the action of the heart in pneumonia are so great, that the circulatory fluid is not propelled with sufficient force to reach the extremities in due quantity: but why the disease should disappear from the lungs, is a circumstance which I cannot satisfactorily explain.

SUPPURATION is a well-known process. Some are of opinion that it is formed from the solids—others believe that it is furnished by the bloodvessels; but it is most probable that, when the mole-

cules of the blood have been effused into the surrounding tissues, and have not been re-introduced into the circulation by the process of resolution, they are softened down, at the same time acting upon the adjacent solids; and thus the formation of Pus.

The last process is that of Sphacelus or Gangrene. When the circulation is entirely suspended in any viscus or part of the frame—when there is no possibility of blood being conveyed to it by any anastomosing branch—when it is deprived of its animal heat, and of the necessary materials for keeping it in repair—it perishes.

I have feebly endeavoured to explain the theory of one of the most ingenious and deservedly celebrated physiologists of his day, —the late M. Magendie, of the Royal College of France. That I have been unable to follow him in his experiments has not been for the want of will, but of opportunity. The whole theory admits of such plausible reasoning in its favour, that I ardently hope that they who are in a situation to do so will put it to the test of experiment.

It is sufficiently plain that our treatment of disease would be very considerably modified, if the principles of Magendie were admitted; but this forms not any part of my present subject. Should, however, the theory be not altogether rejected, I may, hereafter, be induced to submit to some of the fundamental plans of treatment founded on those principles.

Mr. Hubbick.—Do you consider it necessary to have effusion of any of the constituents of the blood in order to cause swelling? I think it possible, by simple distention of the vessels of the part, that this phenomenon may be induced.

Mr. Sibbald.—Swelling, no doubt, takes place primarily in the tissues of the arteries and veins, and effusion follows rapidly upon it; but I do not know that it is a necessary consequence. In the first instance, I grant you, we have only simple congestion in the part.

The Secretary.—Possibly in phlegmonic inflammation we have little more than a distention of the vessels, agreeably to the opinion of Mr. Hubbick; but I coincide with Mr. Sibbald's remark, that we quickly have effusion; and this will, in some measure, account for the considerable heat which is eliminated. There will soon be a deposit of newly-formed matter, into which the vessels will permeate; and with every particle deposited heat will be disengaged, for whenever fluids become changed into solids, there is an elimination of caloric. A similar effect follows when the nutritive process is going on, and also during secretion; nor must the influence of the nerves be unnoticed, for whenever irritation exists there we have increased heat. Should inflammation exist long after effusion has taken place, we have a new organization of the part, imperfect at first, but becoming perfect in the course of time.

Mr. Sibbald denies the vitality of the blood. This involves in it an interesting inquiry, and, therefore, with a view to provoke argument on it, rather than with any hope that we shall be able to settle a point so much disputed, I will venture to disagree with him, knowing full well that my intentions will not be misunderstood.

I cannot view the blood merely as a chemical compound consisting of albumen, fibrin, saline substances, and other proximate principles. At the same time, I know that in this fluid we meet with all the elements which make up the frame; we have water, albumen, fatty matter, osmazome, hæmatosine, certain salts, &c.—by it materials are taken up, and new parts deposited: still I cannot conceive that it is devoid of life.

If the blood, when it is first formed, does not possess vitality, it is soon communicated to it by contact with living parts; but I can see no reason why the first drop or globule which is formed should not be alive.

My reasons are these:—the fluid which we call the blood, consisting of what I have already stated, and being a peculiar fluid holding fibrin in solution, and in which float red globules made up of a central and colourless nucleus, invested by a membrane containing hæmatosine, does not comport itself within as it does without the body. It does not conduct itself as a chemical fluid would if similarly placed. It may be said, that the motion it receives in its tubes prevents its coagulation; but blood withdrawn from the body, kept in a state of motion, and submitted to the same temperature as in the body, nevertheless undergoes coagulation.

Again; it may be argued, that if you place a ligature round a bloodvessel, enclosing blood in it, the fluid will undergo slow coagulation. But then you deprive it of one source of its vitality; you destroy its communication with the nervous fluid; or the current of the nervous influence has been checked. Secondly; we know that blood is subject to important changes, and that, if it does not undergo disease itself, it is, nevertheless, able to communicate disease. This would almost appear to be going back to a modified view of the humoral system, but its truth has been demonstrated over and over again by the production of disease through the aid of transfusion.

As I have just mentioned transfusion, I think that will also bear me out in my view that the blood is a vital fluid, inasmuch as it is well known, that, if the blood of one animal is transfused into another of a different species, serious consequences, which I am not now about to explain, take place. This may arise from the difference in the size of the globules, or from other causes.

I think, however, that there is yet one other very strong argument in proof of the vitality of the blood, namely, the influence

which this fluid exerts on the various organs of the body. There seems to be a mutual action produced by the contact of this peculiar fluid with other parts. If any substance is introduced into the blood, it acts as a foreign agent, creates a vast amount of irritation, and is thrown out by some secretory or excretory organ—a phenomenon which does not occur with regard to the blood itself. This, I maintain, would not be the case, were the blood a merely chemical and not a vital fluid. Vitality must commence somewhere; then why not in the liquor sanguinis, whence all parts have their origin?

I should also say, that I disagree with Mr. Sibbald in the view he has taken of the action of the arteries. I cannot consider them as mere passive tubes; I believe they have an action of their own. It is seen in blushing, and in the throbbing sensation which always accompanies phlegmonic inflammation. These two facts are to my mind conclusive.

It is true that no greater number of actual or real pulsations take place in the inflamed part than at the heart; but whether the action of an artery depends on a muscular coat, or the mere elasticity of the tube, I will not attempt to decide.

All action is referrible to nervous energy, which you may call electricity if you please. I cannot say it *is* electricity; nevertheless it simulates it, and it approaches nearer to the electric fluid in the changes which it produces in the animal economy than any thing else to which we can compare it. The identity of the two fluids we, perhaps, cannot prove, but the similarity between them has been demonstrated. During the last session I adduced an experiment performed by a friend of mine, who had been able, by the divided ends of a nerve, to influence the galvanometer: a critic, however, might ask, was that influence effected by the heat, or by the nervous power! and certainly it is extremely difficult to separate the one from the other in the living frame.

Mr. Hughes.—How does Mr. Sibbald account for the blood not coagulating in the arteries, if it is not a vital fluid? He will reply, in all probability, Because it is kept in motion by the action of the heart.

But the best mode of obtaining the coagulating principle of the blood is by employing motion. It is the peculiar nature of fibrine to coagulate. I have performed many experiments on the blood, and have found that, by stirring it with a stick on which there are asperities, fibrin adheres to it in a moment. The blood was principally drawn from sheep.

With regard to the arteries having a muscular coat, I do not think that there can be better evidence of it than the fact that we always find them empty after death. I have seen a ligature placed on an artery, and in a short time it emptied itself of blood. It may do it to a certain extent by elasticity, but that will exert itself no farther than the actual collapse we find after death. In addition to this, the power which brings elasticity into play must always be greater than the inherent power possessed by the elastic substance. In

winding up a watch, the power you exert is greater than that of the spring. To take an example from worms, the circulation is carried on in the lumbrici without a heart. They have no heart, yet the blood is conducted to all parts of the frame. To ascend higher, and take the mollusca, you find that the blood circulates through all parts of the body, and yet there is no heart. In fish, after the blood has escaped from the heart, it is distributed through the capillaries and the bronchi, where it loses the *vis a tergo*, yet is circulated to all parts of the frame, and brought back again. There have been instances of a fœtus born without a heart, nevertheless the circulation has been carried on. I think these are insuperable difficulties, if the contractile power of the arteries is denied.

Mr. Sibbald.—I will endeavour to refute your objection: the last act of life is expiration, and by that means the arteries are emptied. It may be true that the arteries propel the blood onward during expiration, but in inspiration they are compressed. The right side of the heart receives the blood from the veins; the last act of life is the contraction of the left ventricle, which propels the blood through the arteries. It must stop somewhere, and it stops in the veins.

Mr. Hughes.—I allow it, but we always find the right side of the heart full. Elasticity cannot account for that, and it cannot contain more than the diameter of the vessel before it was distended.

Mr. Litt.—Perhaps Mr. Sibbald has seen the blood circulate in the veins after expiration. I have seen the veins opened immediately after expiration, and the blood has jetted out two or three inches.

Mr. Sibbald.—I should consider that very possible, though I have never witnessed it. I should account for it thus:—the veins must be over-distended, containing blood which ought to be in the left ventricle, and passing out to the arteries. In bleeding a human patient, if the ligature is rather too tight, on puncturing the vein the blood will not flow; but by loosening the ligature, it immediately escapes. I should account for the phenomenon on that principle. The veins after expiration are over-distended, and if you puncture them the blood must flow, unless it be coagulated. I contend that the veins possess elasticity as well as the arteries: and I think that the observations made will go far towards proving the correctness of the assertions in the thesis.

Mr. Hughes.—In the higher order of animals, the elasticity is greatest nearest the heart. Now there are some animals—the sturgeon for instance—where the heart is bony. Comparative anatomy may be objected to, but it was from comparative anatomy that Harvey discovered the circulation of the blood; and I think that has done more to found a correct system of physiology than any thing beside. With regard to a part being inflamed, when an internal organ is attacked the increased heat is not great—it cannot rise above the temperature of the blood; but in an external organ, where there are surrounding agents, it may be 8, 10, or even 15 degrees higher.

The President.—I think there is great credit due to Mr. Sibbald for the Essay he has introduced, and for his boldness in expressing his dissent from the generally received opinions of the day, not only with regard to the vitality of the circulating fluid, but also relative to the structure of the vessels through which it passes. I must, however, say that I entirely differ from him; and in following out the observations which have been so ably expressed by Mr. Morton, Mr. Hughes, and other gentlemen who

have spoken on the subject, I beg to oppose his views, taking up the arguments which he has himself adduced relative to the contractility of the arterial tubes. He tells us, that an arterial tube when distended with blood taken from the body, will, from its elastic power, so contract, as to force the blood out of its cavity, in the manner in which we meet with it in an animal after death. From the correct statement made by Mr. Hughes, that the power operating must be greater than the power resisting, I question that fact. I have been in the habit of stating that the tubular form of the arteries after death, combined with the fact of their being empty, is one of the most convincing proofs of their contractility.

But Mr. Sibbald goes on to ask, "Who ever knew muscular contractility to proceed independently of nervous energy?" I believe that Mr. Sibbald is perfectly correct when he states that it is dependent on nervous energy; but we know that certain parts of the frame, even when detached from the body, still continue to possess nervous energy sufficient to keep up the power of muscular contractility for a long period. With regard to the last act of life being an act of expiration, it is no such thing. How many hundreds of individuals, after having ceased to respire, have again been resuscitated; proving clearly that there is yet a vital principle left within the body. But we know that we can take out the hearts of different animals—the batrachæ for instance—lay them on a plate, and we shall perceive them contract, independent of any blood flowing through them. Take higher animals—the dog and the cat: they have been apparently destroyed; they have ceased to respire for minutes, nay, for nearly half an hour; but when the cavity of the chest is laid open, the auricles of the heart will be seen filled with blood. They relieve themselves of it by pressing it into the ventricle, and the ventricle acting and pressing it into the arteries. All this proceeds totally independent of respiration, and I have observed it over and over again. If any one were to state that an artery possessed the power of contractility after being detached from the other constituents of the body, the reasonings I have advanced would lead us, *à priori*, to conclude that he was correct.

I will only adduce another instance, in addition to those which have been so forcibly expressed by gentlemen who have preceded me in the debate, to shew that the power of the arteries is independent of the heart—namely, the erection of the penis and the spleen. I allude to those organs, because I think the facts are plain, and are likely to be impressed on your minds. How is it that the blood flows into the penis at one period more than another, independent of the heart's action? This must be effected by some inherent power in the arterial tubes themselves. Or, take the

anatomical fact which has been demonstrated, that the arteries which are farthest removed from the central organ of circulation possess the power of contractility in a greater degree than those which are near to it, while, on the contrary, those near to it possess the elastic power in a greater degree than others which are remote. If, therefore, the elasticity of an arterial tube was the grand agent by which the blood was propelled, aided by the *vis a tergo*, I should say that it would have been placed at parts most distant from the heart's action. It seems to me evident that such necessarily would have been the case.

I also intended to state, that there is one important fact, which seems to me, in addition to what has been advanced by Mr. Morton, to prove the vitality of the blood,—that is, its non-possession of the power of coagulation under certain circumstances. In cases of sudden death arising from lightning, or electricity, or unexpected blows on the stomach, the nervous energy is so completely and instantaneously annihilated, that the blood, in common with every other constituent of the body, loses its power of life—its power of coagulation.

There is another point on which I differ from Mr. Sibbald, and he will not think the worse of me for dealing with him thus candidly. It is an important one: it relates to the condition of a part under inflammation. He says, it arises from the same volume of blood passing through a less number of vessels, or vessels diminished in their caliber. I believe that, instead of their caliber being diminished, it is considerably increased; and that the circulating fluid passes through these vessels with much greater rapidity than when in their normal state. You will invariably find that the blood taken from inflamed parts flows with greater rapidity, and that it possesses a higher colour—is more arterialized—than when withdrawn from a part where no such disease is going on. This leads me to infer that, instead of the vessels being decreased, they are increased, and that the passage of the blood through them is augmented in speed. I know that I am opposed to many in that opinion, but it is founded on practical observations made when operating on different animals. If an inflamed part is macerated, and the blood thoroughly abstracted, we can inject a greater number of vessels than when the part is in a healthy state.

Mr. Sibbald has said nothing relative to the coagulation of the blood taken from animals labouring under inflammation of the lungs for instance. Have you any opinion with regard to that point?

Mr. Sibbald.—Yes; I have found that it coagulates much sooner than when taken from animals in health, and that it exhibits a greater share of buff. But whether there is absolutely a greater

degree of fibrin, or there is more serum imprisoned in the cells than in the normal state, I have not ascertained. I had always understood that the blood of glandered animals never coagulated; but I have ascertained that that was not the fact, and that the quantity of fibrin was greater than in the blood of a healthy horse. It constituted two-thirds.

The President.—The blood of ruminants subsequently to coagulation presents no buff. I think that Mr. Simonds first communicated that fact to me.

Mr. Simonds.—I have bled ruminants under all circumstances, and allowed the blood to stand for two or three days, but I never saw it present a buffy coat. I shall be glad to know whether any other gentleman has seen it.

Mr. Cartwright.—I have frequently bled cows labouring under blackwater, and coagulation has not taken place. As to its being a general principle with blood in other diseases I cannot speak, and yet I do not remember an instance in which I have seen it.

The President.—You have stated that, on taking blood from animals labouring under inflammation, you have found it coagulate more rapidly than that withdrawn from healthy animals. Now, it is considered that, when blood is withdrawn from animals labouring under inflammation, there is a larger quantity of buff, and it is longer in coagulating than where the animal is healthy.

Mr. Sibbald.—In diseases of the lungs I have certainly found the blood to coagulate more rapidly; but in such inflammation as influenza and catarrhal fever I found scarcely any fibrin, and the clot was consequently inconsiderable. I have heard the reverse of this stated many times; but the blood I took from a glandered horse coagulated in ten minutes, whereas that I abstracted at the same time from an animal in health was twenty minutes before it coagulated: the normal blood was about one-half buff, the other about two-thirds. You may take this fibrin, put it in a cloth, or something porous, and squeeze out a large quantity of serum from the buff; you may, in fact, squeeze it until there is scarcely any of it left. I therefore think the buff contains the serum. In normal blood you may trace the globules, but not in inflamed blood.

The Secretary.—I have understood with you, Mr. President, that inflamed blood is longer in coagulating than healthy blood; and hence the separation of the red particles from the fibrin constituting the buffy coat. When the fibrin is enabled to contract forcibly, there is frequently a cupped appearance given to the upper part of the blood. This is not observed so much in our class of animals as in the human subject, but there can be no doubt that this is the cause of the cupped appearance. The more powerful the contraction of the fibrin, the smaller is the diameter which

the buffy coat occupies, and this takes place from its having no red particles intermingled with it. Inflamed blood has been found to possess a larger quantity of fibrin than healthy blood, and this will account for the longer time taken in coagulation, and the greater amount of buffy coat.

The President.—This is a subject which is very important, and all of you should thoroughly investigate it; for you will bear in mind that a great many members of the profession lay much stress on the cupped and buffed state of the blood after it is drawn; but I have told you, over and over again, that, after it has once been removed, you need not to pay any further attention to it. It is not from the appearance of the blood that we ought to determine the proper mode of treating a patient. We should be governed by the symptoms which present themselves, and the pulse, and the evacuations of the animal, as to whether we should abstract blood or not. We should not remove this vital fluid, and then look to see whether we have done right or wrong: if the latter, we cannot restore it. I do not attach any importance to the cupped state of the blood; it depends in a great measure on the vehicle into which it is drawn, and the time it occupies in coagulating. Blood which has occupied a long time in withdrawing, coagulates sooner than that which has been withdrawn quickly.

Mr. Sibbald.—Of course you must be guided by the symptoms as to whether you will draw blood or not. But when you have extracted a certain quantity of blood, the animal is relieved. In inflammation, however, of a viscus, the symptoms may return in four or six hours; and I think that in those cases you may be guided by the appearance which the blood presents as to whether it is proper or not to repeat the venesection. Whenever I withdraw blood, I look at it to see whether I should remove a larger quantity.

The President.—I think it is of no use at all. It is common to hear people say, "I opened a horse's vein; the blood was dark coloured, it flowed like treacle, and I was sure he would die." In those cases, I am quite certain, the pulse would not have warranted the opening of the vein. I think it is very fortunate that the appearance of the blood is of no consequence. There is not an old farrier who will not ask for the blood to be set aside. On his next visit he puts his finger into it, says it looks very black, and orders it to be thrown away. It looks very knowing; but as to governing the treatment of the disease, it is ridiculous. I once made an experiment on four healthy animals as to the time the blood was in coagulating and forming buff. Their pulses were all natural; I took a quart of blood from each, and the time occupied in coagulation differed in the whole four. On the following day I

extracted a further portion from each of them, and the one which took the longest time the day before coagulated the quickest on that day, and *vice versâ*; yet these animals evinced the same state of health, and fed on the same food. If they had fed on a different kind of food, doubtless there would have been a difference, on that account, in the time the coagulum took to form. I think we can draw but little inference indeed from the period occupied in coagulation.

Mr. March.—I have abstracted blood in inflammation where there was no appearance of buff, and in other cases, where there was no inflammation, I have seen little or no buff; so that I do not attach any importance to it, and never should be guided by it in repeating bleeding.

Mr. Cresswell.—I have found that, on abstracting blood from a horse in a state of health, previous to exercise, there has been but little buff; but on again bleeding him, after severe exercise, it has presented a great deal of buff.

The President.—That is natural enough. Similar experiments were made some time since by Mr. Vines, and I consider them very important. I saw him also extract blood from several asses in this institution, and it presented a natural appearance. He then drove the animals about for a length of time, and, after they became exhausted from violent exertion, he again bled them, and the blood was precisely analogous to that which you may expect to find in an animal dying from extreme debility and emaciation. Thus a corresponding effect is produced by opposite causes.

The further consideration of this subject was then adjourned.

APRIL 14, 1840.

The consideration of Magendie's theories was resumed. Mr. Cooke, V. P., being in the chair. This, however, is a subject highly interesting, perhaps, to the pupil, but in which the practitioner will feel little or no concern; for his physiological principles have long ago and finally been settled, and his only or principal concern is the application of them to the various cases of disease which come before them. For this reason, possibly, there was not a practitioner present. For the students, however,—but these students' nights must not be too often repeated,—it was an interesting and highly creditable evening. The parties, nevertheless, were not equally matched; for Mr. Sibbald stood alone in his defence of the French philosopher, and his opponents, one after the other, attacked him on every vulnerable point.

Mr. Hubbick asserted the expansion of the arteries under inflammation—Mr. Twinberrow maintained the vitality of the blood—Mr. Hughes gave a correct and luminous account of the action of the arteries in inflammation, and the admission of red blood into parts that did not contain it before; and drew a useful distinction between the doubtful increased velocity of the blood in inflammation, and the actual increased strength.—Mr. Litt elicited from Mr. Sibbald the reason of the throbbing and pain in an inflamed part, and maintained the contractile power of the arteries, and their consequent vitality.—At length Mr. Sibbald, pressed on every side, confessed, with a candour that did him the highest honour, that he began to waver on several points connected with the subject. He would carefully and dispassionately review every point, and at some future period he, perhaps, might be allowed to address them again.

The Secretary concluded the business of the evening with the following very appropriate remarks:—I presume, Sir, that the Essay may now be considered as having been fully discussed, and we are indebted to Mr. Sibbald for having introduced so interesting a subject. He has said, that he fears he has been beaten on many a point; but it will be conceded that he had a difficult battle to fight, when he espoused the part of a physiologist whose doctrines have been embraced by few in this country, and possibly have not been sufficiently estimated. Most of our practitioners were educated under a pupil of John Hunter, whose sentiments they have imbibed, as Mr. Sibbald has those of Magendie. The good feeling which he has manifested during the consideration of his paper will be imitated by other students.

APRIL 28, 1840.

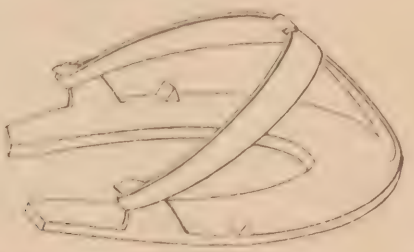
The President in the Chair.

Mr. Carless, V.S., was elected a Member.

Mr. Ernes laid upon the table a newly invented Tracheotomy Tube, brought by him from Paris; and M. De Gournay several of his Patent Shoes. The following remarks were made by him through an interpreter, and the subjoined engraving will give some idea of his ingenious invention.

It will be seen that the shoe itself is the common French shoe, flat at the upper and under surface, and a little turned up at the toe. The means, however, by which it is attached to the foot are very ingenious. Perhaps the notion of it was derived from the "Horse Sandal" of Mr. Percivall. The object is the same,—to

attach the shoe to the foot without the use of nails; except that, while Mr. Percivall's was never intended to be more than a temporary substitute for a lost shoe, this is designed for constant use. If, however, the first idea of such a shoe originated with Mr. Percivall, there is much ingenuity in the construction of this. The question is, Will it answer?



The reader will notice a strong plate of iron, three quarters of an inch wide at the base, rising from the toe of the shoe and climbing up the front of the foot, somewhat narrowing as it rises; adapting itself to the slanting direction of the hoof, and terminating at a little more than half way up the hoof. It is a curious kind of crotchet or clip. Next, not in position, but as conveying a satisfactory notion of the use and working of the shoes, are two curved projections rising from the heels, which the inventor calls ears or stays.

From one stay to another, passing over the front of the foot, and confining the crotchet, is a *band* or *bridle*. It may be made of metal or of leather: the former is generally used, as most to be depended upon. The ends of the band or bridle are brought round the ears or stays, drawn or hammered until they fit the foot as tightly as possible, and then rivetted a little anterior to the crotchet.

Lest the shoe should not be sufficiently firm on the foot, there is a point or catch a little anterior to the crotchet, about one-third of the width of the shoe, and one-third of an inch at least in height, which enters into and is buried in the wall of the hoof. This is called the *talus* or *catch*, and is supposed to break all concussion, and keep the shoe firm on the foot.

In winter these shoes may be pierced with screws, to prevent slipping. In cases of disease a crotchet with a hinge, and communicating with the band by means of screws, is used.

Such is a fair description of the shoe. It remains to be seen what will be its durability,—how far the anterior part of the foot will bear the united pressure of the crotchet and the band,—and what will become of the posterior part of the foot confined by *the talus*. The reader has the debate on these points without the alteration scarcely of a word.

M. DE GOURNAY'S PATENT SYSTEM OF HORSE-SHOEING WITHOUT NAILS.

To discover a system of shoeing without nailing, has for a long period seriously engaged the minds of many respectable and humane persons; and not only those immediately connected with the art, but also of many others, who were well convinced of the immense advantages which would result from it to the proprietors of horses; and this not only in preventing diseases occasioned by nailing, which may deprive the owner of his services for a shorter or longer period, but from a still more important motive, that of the preservation of the animal; for every one knows that it is the wearing out of the legs and feet which disable and render him useless. It is, therefore, quite natural to suppose, that as the foot of the horse on the new system would be quite at ease, and consequently always in health and vigour, his duration under the proposed plan would be double that which he experiences under the old system.

In order to be fully convinced of the truth of my assertion, it is only necessary for any person, having the least knowledge of horses, to examine as they pass along the streets the hoofs of many draught horses, which will be found so abused by nailing, as to render it almost impossible to make the shoes hold on. It is unnecessary to enlarge further on a subject of the truth of which all must be convinced; I shall, therefore, confine myself to giving some explanation of the system.

In order to render this invention really useful, and bring it into general practice, it was not alone requisite to produce a plan of shoeing without nails which should be perfectly firm and solid, but great difficulties were yet to be vanquished, viz. to manage so that it should not in anywise wound or inconvenience the horse; and, finally, in order to make the system complete, it was essential that the work should be done at the same price as on the old plan.

I now affirm, in the most positive manner, that I have attained this end. The shoe is perfectly secure in its attachment to the hoof, neither contracting nor injuring the foot, nor in any way impeding his action; and not only may it be established at the same price as the old method, but there is a direct economy in the new plan. The foot of the horse, having a more equal bearing, causes the shoes to last a little longer, and there is the much more important circumstance of *his* longer duration from the preservation of his hoof.

Numerous trials have been made in London on horses of every class—carriage, saddle, draught, and common cab, and also on

horses of veterinary surgeons of reputation and well-informed in their art. Horses of considerable value have also been sent from His Grace the Duke of Northumberland, Count D'Orsay, Colonel Needham, Mr. Davis, Riding-master to the Queen Dowager, &c. &c. &c., all of whom have obligingly given written testimonials of their approval of the system, and their desire to see it generally adopted. These are not mere assertions, but facts which may any day be seen.

It may be mentioned here, that a horse of Colonel Needham's had been so abused by nailing, and all the four feet so injured, as to be regarded by the Colonel as incurable. Notwithstanding which, after four shoeings on my plan, his hoofs became as well formed and healthy as ever.

It only remains, then, for the general adoption of the plan to conquer that repugnance with which every new invention is sure to be regarded, and which must, in this instance, be formidable, it having to grapple not only with private interest, but also to change a system almost coeval with the existence of horses. If the numerous attestations which I possess should be insufficient to convince the sceptical, my sincere hope is that nothing will prevent such persons from making a trial themselves; for it has been justly observed, there is no proof so incontrovertible as experience.

The following letter was then read:—

224, Oxford Street, April 28th, 1840.

"My dear Sir,—I am sorry I cannot be with you this evening. My opinion has been long ago given on the shoe, and which was unfavourable to it; and, unless the principle is altered, I can never consider it applicable to the foot of the horse. We are called on to allow the foot to expand, and this shoe has an opposite effect; and, under all circumstances, it certainly could not be applied to *all* horses' feet. I hope, however, that the opinion of the Veterinary College may be obtained, and, although this evening's investigation of it may not be favourable, that they will, nevertheless, give it a trial.

"I remain, &c.

"WILLIAM FIELD."

The President.—The object of the inventor of this shoe has been to do away with the unpleasantness and the painful results which sometimes accrue from the application of the common shoe by the introduction of nails into the hoof. By the employment of nails, you not only apply a fetter to the foot by the application of iron to its inferior surface, but you also introduce a foreign agent between the fibres of the wall of the hoof. The surface of the shoe may be altered according to circumstances, or the fancy of the individual who may be engaged to apply it; therefore it is not a

matter of much consideration. The fact most worthy of attention is, the means adopted by the inventor so to apply the shoe as to enable the animal to accomplish the labour he is called upon to perform without producing lameness. I trust that the gentlemen whom I have the honour to see around me will give their opinions unhesitatingly as to the value of this shoe, and particularly as to the propriety of the means which have been proposed for fastening it on the foot. Are they or are they not less likely to operate as a fetter to the elastic structure of the hoof, and thereby prevent lameness?

It will appear to some that there are many objections to be advanced against it. You will perceive that, in addition to the common shoe, there are two clips placed at the posterior part of it; and, attached to them, is a piece of iron passing round nearly the whole of the hoof. In the centre this is held in its position by a portion of iron near the toe in the form of a clip. In addition to these fastenings we have the anterior clips, which by the application of a knife or file are kept in junction between the wall of the hoof and the sole.

You are aware that the foot of the horse where the union takes place between the inferior extremities of the wall and the outward part of the sole is thickly covered by the outer portion of the hoof; and, therefore, it is supposed by the inventor of the shoe that this clip may be put on with impunity, and that the apparatus is an additional fastener to the shoe, tending to keep it in its proper position. The projections on some of these shoes are termed frost nails; they are to prevent the animal from slipping when the roads dangerous. In other respects they might be fullered as common shoes. All these little alterations may readily be effected in shoeing. The grand question is, whether this is a shoe applicable to common purposes; and whether or not it will be the means of relieving the animal from that foot lameness which we are convinced arises from the introduction of nails in the common shoe? That seems to me to be the principal subject we have to discuss.

Mr. James Turner.—I had hoped that we should have been favoured by the ingenious inventor of this shoe with rather a more detailed history of its origin and progress; not, however, that this is material, for we may take it for granted that it has been tested to a certain extent.

Much credit is due to M. de Gournay for the mechanical ingenuity he has displayed. My strictures, and all the objections which I am about to make to the shoe, I am free to confess, fall to the ground if the foot of the horse can be proved an inelastic inflexible block; but, for the sake of argument, I shall assume that this organ is endowed with the most extensive elasticity, flexibility, tough-

less, and solidity, considering its *limited space*, that the comparative anatomist is enabled to select throughout his vast range of observation.

Other animals, as well as the horse, possess locomotive powers, extending even to the immense velocity of a mile in a minute on the uneven surfaces of the earth. With some of them, the cloven foot or a division into toes suffices, and the elastic apparatus is thereby much simplified; while, on the other hand, I mean to contend that there are no solid structures to be found in animal mechanics equal in complexity to the internal mechanism of the horse's foot. This organ evinces as much design on the part of the Creator as the structure of the human hand. The anatomist, in unravelling and taking to pieces this machine, layer by layer, finds that its supporting base, instead of being limited to the breadth of his own hand, as it appears to the superficial observer, forms in reality, when unfolded, a supporting basis of more than ten times the surface which meets the eye; and you all know the enormous strength of this laminated suspension apparatus—this bond of union between the foot-bone and its hoof: the attempt, in the fresh killed foot, of detaching its horny protection by the vice and pincers altogether fails, and the disunion can only be effected by a breach of the coffin-bone itself.

I fearlessly assert, that the Divine Architect has never made any animal structure within the same limited compass, and endowed the same with a greater amount of strength and mobility combined. It was expedient that the Arab's foot should be limited to the compass of a cricket-ball, with a surface equally solid, and an interior as yielding as gum. The foot of the horse has been doomed for a thousand years to endure the scourge of iron shoeing, the result of man's ingenuity insufficiently cultivated. It has now emerged from this barbarism by the blessing of the "unilateral shoe," and is emancipated from the fetter of the common shoe attached by antagonist rivets.

But, Gentlemen, the shoe presented this evening for discussion, *void of nails*, is the greatest monster of a fetter which has ever crossed my path during thirty-five years' experience in these matters. A treacherous friend is worse than an open enemy; and I predict that, while it may effectually preserve the integrity of the casket, it will inevitably crush to powder the *jewels* within.

Be not deceived because the evil does not immediately manifest itself. The wild unhaltered three-year-old colt is led on the morrow to the forge, and if shod upon the oldest and worst method or principle, with iron and nails, provided the quick of his foot is not pierced or bruised, you know he will not only leave the forge free from lameness, but will bear the repetition for several successive

months, or a year, with impunity, so far, at least, as the observation of his owner goes; yet the discriminating eye of the zealous veterinarian will look in vain, at the end of a twelvemonth, for the normal condition of the base of the foot. Its aspect will be less bold. The extremities of the heels will have approximated just in proportion as the commissures are less conspicuous; but even yet the colt remains free from lameness! I cite this example merely to shew how insidious is the progress of the *precursors* to foot-lameness in the majority of instances, even with the old or worst known method.

But, Gentlemen, abominable as was the system, it had this redeeming quality,—it did leave the *extremities* of the heels comparatively free from bondage. Now, behold the manacle before us! this most vicious of any vice—these cruel, torturing, inflexible wings, or gripes, at the very extremity of each heel, with all their baneful amount of mechanical leverage, in conjunction with one much higher at the toe acting in concert with an inflexible band of iron encircling the entire hoof, operating as a perpetual stricture, and even higher in the hoof than the most vile nailing of rustic shoeing. If the old abandoned system of shoeing, by curtailing the laminæ in their functions, and afterwards in their structural proportions, has entailed upon him that curse upon good horseflesh, the "navicular joint disease," what may not be feared from this last invention, which is void of any safety valve, and can only pretend to defend the *surface?*

This is a mere outline of the grounds of my objection to this new invention. If it should hereafter be shewn that that beautiful piece of mechanism, the horse's foot, is inelastic, or a mere unorganized mass—that it has not those internal movements we have supposed—then my objections will be invalid. I think the subject is deserving of due consideration.

It may be said that the shoe has been already tested; but it should be borne in mind that this new system has not long been in operation, and that the period for ascertaining its evils has not yet arrived. I have already said, that a horse is not rendered lame by the most vile shoeing in the first instance, but that the mischief is the gradual work of time.

I believe that the mischief consists in a partial curtailment or diminution of the sensible and insensible laminæ; I believe that the wholesome action of the foot in all its parts is kept up by the elongation of these laminæ, and consequently a descent of all the contents of the hoof. Now, I cannot imagine how it can be possible for the base to be made a fixture, and its powers of dilatation to be so completely opposed by such wedges as these, without the internal movements of the foot being rendered a nullity.

There is another objection which I must not omit noticing, namely, those indentations which I presume are indispensable to the securing of the shoe to the foot. I presume they have been introduced with the hope of preventing this terrific wing from closely touching the quarters; and although they may not touch when they are first applied, yet they are so nearly in approximation that the motion of the foot must inevitably bring them into contact. These indentations occur at such a contractile part of the foot, and more especially that with which the inside of the heel is concerned, that I will venture to say there will not be one working farrier who will not be terrified at the idea of them. It may be said that the part is insensible; but when a horse has been in a state of absolute rest, and there has been a tip in the old-fashioned form, though it is clear of the hoof, and not penetrating into it, on having any tendency to do so, I appeal to practical men whether it is not necessary, when it has been on the foot three weeks or a month, to remove it.

But suppose that in reality there was no such evil, I would venture to predict that the fame of this invention must eventually be blasted, even though it may be good in itself. Prejudice alone will bring it into disuse. It is a pity that it should be so; but I know that it cannot withstand the prejudices against it, even though it should be only those arising from these indentations.

However well horses may be shod in this country—for I will not speak of foreign parts—they will have their good days of performance, and their bad ones; and whenever the latter occurred it would be attributed to this new mode of shoeing. It would be impossible, however sanguine the supporter of the system might be, to remove the prejudices of grooms to the appearance of such indentations under the centre and ball of the foot. Do not let it be supposed that I am creating unnecessary difficulties and objections,—I would not act so dishonourably; but I do contend that even if those obstacles should not occur which I anticipate, prejudices against your plan could not be got over, unless you could do away with that set of servants who are necessarily concerned with the management and taking care of horses. I am satisfied, however, that, before this discussion terminates, the inventor will have to encounter not a host of enemies, but of objectors.

I have stated thus much merely as touching the principle of the invention, and as to its being detrimental to the internal organization of the foot. With reference to its practicability, and its standing wear and tear, I am no prophet. Then, again, with regard to the expense, I believe we can manufacture iron goods as cheap at Birmingham as in any part of the world; but I should be astonished if these gentlemen could bring from the Continent these articles

ready made, so as to meet the price of ordinary shoeing. If it succeeds altogether, I should say it is a miracle: but I shall not think that the unilateral system of shoeing is superseded, until I have more convincing proof of it than I have at present.

I have now attempted to express a portion of my objections. I should like to add others, but I feel that I should be intruding too much on your time. There are my seniors in practice and experience here, and I have no doubt that they are anxious to record their opinions.

Mr. Ernes.—The answer which M. De Gournay makes to the observations of Mr. Turner is, that the expansion of the foot *is in a backward, not a lateral direction;* and, therefore, that his shoe never can injure the horse's foot. As there is plenty of room left at the sides of the foot, he thinks this objection cannot be well founded. As to the indentation, if that is any injury, the nails must be a still greater evil.

Mr. Turner.—When the shoe is partly worn out, it will come almost in immediate contact with the laminæ. This is manifest from an old shoe before me.

Mr. Ernes.—He says that the horse to which this shoe was applied had a very strong crust, and therefore, he thinks that one half the size might do. By confining the quarters he found that it produced lameness, therefore he left a space to allow the quarters to expand, and since that he has never had lameness. If a mould of the horse's foot were taken in plaster of Paris, and the horse were shod afterwards, he would engage that there would be no diminution of the hoof, which there would be if it caused pressure. For my own part, I think the band must press on the foot. There is only one advantage in it. I thought it might be removed at night, and the foot be left at liberty; but as it is a fixture, by the manner in which it is employed, that advantage could not be obtained. I confess that I have the same objection to this shoe that Mr. Turner has. I agree in the opinion that the invention is very ingenious, but it will not answer the purpose for which it is intended.

Mr. Henderson.—I have had but a very limited opportunity of examining this shoe, but Mr. Turner has requested me to give my opinion upon it. The invention, so far as that goes, is very ingenious; the appearance of the foot is prepossessing; but I doubt the advantages likely to result from it in practice, because we have all been taught, and I believe that our own experience has shewn, that we have been correctly taught, that the foot is highly elastic; that its internal structure is highly sensible; and that, if it is confined in its motion, it must be injured in some way or another, and lameness must be the consequence.

M. De Gournay has said that there is no fear of these clips con-

fining the action of the foot. But these clips are placed against the most elastic part of the foot, and in the shoe, which has been applied to a living animal, I observe that the margin of the foot was completely in apposition to the clips. The wear of the shoe will shew this, so that the clips must have been in actual contact with the hoof. I think I am right when I say that the shoe would not be sufficiently secure on the foot unless the clips were closely in contact with the quarters. If that is the case, it is a decided objection to the shoe, to say nothing of the band and other parts of this machine.

The band is calculated to confine the foot as much as any thing which can be invented for that purpose. These projections may certainly be applied by a skilful artisan without producing injury; but they are placed in the weakest part of the foot, where the horn is thinnest, and, therefore, I consider that this is a bad situation, at all events, for these projecting points.

Another thing, which would operate very much against it, would be the expense. According to the wages we are obliged to pay our men in London, the cost of shoeing a horse would be more than quadrupled. I am quite certain that must be the case.

Another very great objection which occurs to me is, where the horse is in the habit of *cutting*. How that is to be prevented with this shoe I cannot perceive. I think he would soon cut through the joint. You can apply these shoes as close to the hoof as possible; perhaps closer than you could do it were you to employ nails: but if the horse strikes his hoof, here is a sharp knife with which he will do it.

I fear it is an attempt at improvement which can never be brought into practice. It looks very well on the table—very well in the hand—and, in a few instances, it may do very well in practice; but, as a general plan, it cannot be adopted. The longer it is tried, the more objections you will find. At present, we are only speaking of the foot in the hand, and are merely theorizing upon it. The practical operation of the shoe we have yet to find out; but, so far as I can judge of it, I think that it cannot be brought into general use. I object to these clips, as being liable to injure the horse by striking his legs; and if you endeavour to prevent it by making them closer, you have a worse evil to encounter by contracting the horse's foot.

The Interpreter.—To some of these objections M. de Gournay has already replied. With respect to cutting, I can only say that I have heard him relate cases where horses have been accustomed to do that, but after being shod on this system they have left it off. He says that he does not see how it is possible that this small point should injure a horse's hoof so much as a nail of the same

thickness driven in to the extent of an inch. He also says that it does not press on the hoof at all, and therefore it cannot injure it.

Mr. Henderson.—That is all very well; but here is a shoe which has been applied to the living foot, and has been worn out. I cannot help believing that, in order to keep the shoe firm on the foot, it would be necessary to keep these clips in close contact with the hoof. Here is another shoe which is worn out, and that is still worse. It has evidently been worn to the full extent of the substance of the shoe.

The Interpreter.—My friend says that, in the first instance, it is necessary to know whether or not it would be an advantage if a system were devised by which a shoe could be held on firmly without injuring the foot, and which should supersede the necessity of nails? Experience alone can prove whether he has invented such a system. In answer to this shoe pressing so firmly on the hoof as to cause injury, he says that the hoof would diminish with the pressure.

Mr. Henderson.—It would be a long while in diminishing. Every time a horse puts his foot to the ground there is action; and if that action is confined, it presses on the sensible parts and produces inconvenience. It is, every moment, at painful inconvenience that the horse moves his foot. When this shoe is applied, the foot is in the smallest compass. It is off the ground—there is no pressure on it; but if the shoe is applied to fit the foot, the instant the animal places it again on the ground, he feels the contraction as we would do a thumb-screw. It is on the principle of elasticity that we contend.

The Interpreter.—I shall not contend whether iron nails driven into the hoof will allow of more elasticity than this shoe or not. A trial of it is the best method of proving whether my friend is right or wrong. He merely says, that if this should press on the foot it will diminish the hoof: but, in order to prove that it does not press upon it, he would have a model of the foot taken in the first instance, and, after the horse has used these shoes for one, two, three, or six months, he would take another model, in order to see whether the hoof had diminished or not.

The President.—We must not compare this mode with the old practice of introducing the nails as far back as the heels on each side, but with the most modern and approved system of shoeing with nails. There have been many improvements made. The shoe I hold in my hand was invented by Mr. Turner. It is called the unilateral or one-sided nail shoe. There are no nails piercing the inner surface—the inner quarter, and therefore there is a large portion of the hoof left free to exercise its elastic action. We must hence come to the conclusion, and we can very readily do it,

whether these clips are more objectionable in themselves than the application of nails to the outside of the hoof, and the little clips at the toe of the shoe. This shoe of Mr. Turner's I regard as *par excellence* the modern shoe founded on the best principles, and which have been reduced to practice.

The Interpreter.—I think it is a great point gained, that you would not compare it with the old system, but the newly invented and best shoe. This is the highest praise which my friend's invention has received this evening.

The President.—I have not yet said that it holds any comparison with the modern, or is worthy of it; but in arguing this in a practical point of view, the modern system is the one with which we must compare it, and by which we must test it. I do not even say that it is an improvement upon the application of the common shoe as used in olden time. I may have an opinion on that point; but I have not yet expressed it. If it is not an improvement upon that, of course it must fall to the ground. If it does not afford the facilities of the last of these shoes, it will also fail, and therefore we must compare it with the most modern style of introducing the nails.

Mr. Burrel.—Here is one of four shoes on M. de Gournay's plan applied to a horse belonging to Prince Bonaparte. They were on two days. The horse was ridden one day, and on the day following he could scarcely get out of the stable. He was lame in the near fore-leg. He had previously had disease in the foot-joint. He is now in a box, and not able to work. The Prince could not think that the shoes were the cause of this, because there was no lameness like that which occurs after shoeing.

About eight months ago this horse was lame in the fetlock joint, and was under treatment two months. There was enlargement round the tendons. That was removed, and the Prince rode him regularly. I was in the habit of shoeing him with leather as well as iron on each heel, in order to raise the heels, the horse being long in the pastern. By doing that I relieved the joint and sinews to a certain degree, and he was workable; there was no lameness whatever. The Prince rode him once in these shoes: he had a fresh strain in the joint, which caused inflammation and thickening, and he is now under treatment on account of it. That was in the fore foot. He was slightly injured in the hind foot, but, on applying poultices for two or three days, he was better. If you can get smiths to keep the clips at a certain distance from the heel, you may prevent lameness, but you must watch them closely. Three days after the lameness occurred the whole of the shoes were taken off.

The Interpreter.—I am aware it will be inferred that this shoe

lamed him in the hind foot, but it cannot be said that it lamed him in the fore foot.

Mr. Burrel.—This shoe being so thin, lamed him in the fetlock joint.

The President.—What proof have you that the application of the shoe was the cause of the lameness in the fetlock joint?

Mr. Burrel.—Because he was sound before.

The President.—That is no sufficient proof. You say that he had a shoe of this kind, and was not lame previously. He was ridden by his owner, and became lame. That is an occurrence which might take place to you or me, or to any individual. I do not mean to say that it is not probable that this new mode of shoeing caused the horse to stumble, and thus to give rise to disease of the fetlock joint; but you have no proof of it. I will admit that the thinness of the heels was the cause of the horse stumbling, but in order to obviate it you should make them thicker. The heels of these shoes may be made thicker or thinner at pleasure, therefore the case you have referred to does not set aside their applicability.

Mr. Thomas Turner.—I believe that I shall add very little to what has already been said on this most important subject. It appears to me that this shoe is a beautiful piece of ingenuity, and highly creditable to the inventor, supposing the foot to have been a block. But I am one of those who take up the opinion which has been laid down for the last half century regarding the elasticity of the foot. I believe it to be correct. I think that the foot does dilate every time it comes in contact with the ground. I hold that these bars—these enormous stays at the extremity of the shoe beyond the usual point to which any nail is driven, must be very serious fetters.

I am inclined certainly to agree with Mr. Henderson, that it is of importance, if the stays are to be there at all, that they should be at some distance from the hoof rather than in immediate contact with it, because they may then allow of a trifling movement when the foot comes in contact with the ground. I am also of opinion that there is much more motion of the foot when it comes upon the ground than the profession generally is inclined to admit. I will state my reasons for entertaining that opinion. I am in the habit of seeing both hunters and roadsters, and the owners frequently say, "Here is a great contraction of the foot; I wish this to be remedied." I always employ the unilateral shoe for widening this objectionable looking foot. The shoe having been applied, three weeks or a month elapses before I am perfectly satisfied that any dilatation has taken place. It is then apparent not only at the heels, but at the quarters; and I have been enabled to point out to

my employers a portion of the foot over-hanging the inner edge of the shoe at the side to which no nails are attached. That has occurred only in one shoeing, for having been followed up for a period of six, nine, or twelve months, the alteration brought about has been such that no gentleman unacquainted with the subject could form the most remote idea of it.

M. de Gournay's shoe has, in my judgment, a tendency to confine the whole body of the foot; and as I am satisfied that the foot is inclined, under the superincumbent weight of the body, to occupy a larger space on the ground than in the air, I cannot but regard this, or any thing else which prevents its dilatation, as a most dangerous fetter. It is morally impossible for the horny box of the foot to dilate under this vice, or to overcome the force of the fetters which are posteriorly placed in this apparatus, and, of course, held fast by the bands around the whole hoof.

You have not only a great lateral action of the foot, that is, a bulge at the sides, but you have a considerable dilatation throughout the whole extent, particularly in the crust. I am of opinion that this shoe would have a tendency, in time, to limit very much the action of that beautiful piece of mechanism, the laminated structure; for we all allow that a more beautiful adjustment of parts cannot possibly be imagined.

In the same proportion that you limit the action of the laminated structure, you prevent a due pressure on the sole, and also its descent which is so essential to the welfare of the foot; for it ought to descend every time the foot comes in contact with the ground. If you have the full expansion of the laminated structure, and the full descent of the sole, you then prevent that most important organ, the navicular joint, from being placed in jeopardy. I believe that, in nine cases out of ten, it is the alteration of the form of these parts which is the precursor of navicular disease, reducing a horse from the value of 300 guineas to 300 shillings. I cannot give my sanction to a fetter of this description, putting in jeopardy that beautiful piece of mechanism, the horse's foot, and which I believe to be an elastic body, such as can hardly be shewn in any other animal than the horse.

I will now direct your attention to an old shoe which has stood the test of wear, and which was invented by this gentleman. This shoe affords good proof that the foot does expand. This was worn, perhaps, by a good goer, a horse of capital action, which hit the ground hard; and there is some appearance of the bar being overcome, for it is twisted. Perhaps those on the table are so strong that it is impossible for them to act in that way.

With regard to these points in the middle of the shoe, of course they are placed there to make it additionally secure to the foot; but

I am satisfied that they are very objectionable. Some horses hit the ground so lightly, that they will have no tendency to work or grubble into the foot; but where you have a good goer it is highly probable that they will—and, if they do, they will be productive of great mischief. I do not know whether the inventor purposes varying the parts of the hoof to which they are to be applied, or whether he will always put them in this position.

Although I agree with Mr. Henderson that it is objectionable to put them close to the hoof, because then you deprive the animal of the least power of overcoming the obstructions to the important functions which I have described, yet, if they are very far removed, the insecurity is obvious,—the shoe cannot be kept on. My belief is, that this apparatus cannot be brought into general practice—indeed, *general* practice is out of the question. From the unscientific it will meet with great admiration; but there are in our profession a vast number of anatomists well acquainted with the form of the foot; and when they see that this interferes with the elasticity of that organ, it strikes me that they will not be so mad as to adopt that which will be productive of mischief.

Now I am delighted at all times and on all occasions to compliment any inventor, and particularly in this age of improvement. It would be gratifying if an apparatus could be invented for applying the shoe without nails, and where the internal functions were not interfered with, and yet security obtained. But this shoe is not the desideratum, though I must give the inventor some credit for it. In cases where you have a leg accident,—say a wound of the tendons from hunting, or a wound of the back sinews, where you are desirous that the animal should not be annoyed by pulling the shoe off repeatedly, and you want to give him the benefit of his legs, and have not an infirmary box,—I should say that this shoe is applied with less difficulty than in the ordinary way, because it admits of being put on at your convenience. I should, however, prefer the one with the joint in the front. I should object to the clips, put them where you will; but their being at the extremity of the heels, behind where any nails are placed on any occasion, is to me terrible.

The President.—Although I believe that most of the members of the profession are of the same opinion as those who have hitherto spoken, with regard to the elasticity of the hoof of the horse, and also with respect to the manner in which that elasticity is brought into action, still I am aware that there are some members of the Association, and some now present, who are opposed to this the generally received opinion. I see one gentleman to my left, Mr. Charles, who holds different opinions on this subject; and perhaps he may

entertain sentiments regarding the shoe before us different from those which have been already advanced.

Mr. Charles.—Differing as I do from the physiological views of Messrs. Turner and Henderson, my objections to this invention will not be of the same nature as theirs; nevertheless, I have objections to it.

The first is, with reference to the expense. I cannot conceive how a shoe can be put on at the price now paid.

There is another very powerful objection. I could mention several cases in which it is advisable to lose a shoe, as, if we did not do that, we might lose a leg; for example, in hunting, or catching the foot between two stones in London.

I do not intend to give my opinion as to the expansion of the foot; but with regard to these clips I call the attention of Mr. Turner particularly to this fact, that it is not uncommon in cart horses to see a clip as large as that put on each side of the shoe, and yet in these cases we do not find lameness to be the result. But the subject has been argued as if no horses had been shod on this principle. I would inquire how many have been shod upon it?

The Interpreter.—In this country perhaps a dozen; in France the number is considerable: but M. De Gournay can hardly say to what extent it has been carried in Russia, one entire regiment there having been shod in this way.

Mr. Charles.—Not producing immediate lameness seems an argument against the expansion of the foot. I am of opinion that this shoe might be put on a young horse with a sound foot or horn. It is only where the foot is cut away and worn out that inconvenience might arise. I think it is an ingenious device, and very secure so far as I can judge; but it will never come into common practice, arising principally from the expense.

The President.—You do not believe that it would operate in laming a horse?

Mr. Charles.—Not if he had a good strong foot; but it might have that effect on nine-tenths of the horses working in London, and particularly old horses, because there is less horn existing in the crust; and where there is not a sufficient mass of crust for the weight of the animal to be dispersed or lost upon, the weight comes outside. You may then have expansion, and any thing obstructing it might cause lameness. There is an old trick practised at country fairs,—that of having an anvil placed on the breast, and struck with a hammer. If the anvil were diminished to a certain weight, so that there was not a sufficient mass of iron for the blow to lose itself, death would ensue.

The President.—That does not appear to me altogether to

answer my question satisfactorily. You tell me, that, if this shoe were applied to the good healthy foot of a young horse, you do not believe that there would be inconvenience arising from it; but, on the other hand, if applied to old horses, nine-tenths of them would become lame. Now I want you to explain why you are of opinion that these old horses are more likely to become lame than young ones. You lead me to understand that it would arise from the want of sufficient horn in the foot of an old horse. Is that a practical fact? Do we not find in old horses, instead of a weakness of the hoof, that there is an immense strength of hoof which is considered to require rasping away!

Mr. Charles.—That goes to the root of the question respecting my opinion of the expansion of the foot.

The President.—Is it your opinion that this shoe, applied to the domesticated horse, would be more likely to produce lameness than the common shoe?

Mr. Charles.—I should think so, more particularly since many improvements have been made in shoeing. I also think that in some sort of feet we might have expansion, whereas in the strong foot of a young horse that would not be the case; thus we may have expansion in one foot and not in another, all depending on the state of the horn. I believe that in a state of nature it does not expand.

Mr. Thomas Turner.—You do not think there is expansion on the ground surface—that is, the lower edge of the crust—but you do not say there is no expansion in the general body of the crust?

Mr. Charles.—I think if it expands it is only when the frog comes violently on the ground.

Mr. Thomas Turner.—You have no doubt that the band would be objectionable?

Mr. Charles.—None; and the higher it is the more objectionable it would be.

Mr. Barth.—When I first saw this shoe I was inclined to throw it aside as an objectionable thing; but, on examining it again this evening, I cannot help thinking that those who have so strongly condemned it entertain a wrong idea of it. On looking at it, I perceive that the stress is from the anterior portion of the clip to the centre of the foot in front; and, therefore, I should say, that there might be sufficient room left at the heels and quarters to allow of the expansion of the foot.

It has been stated that the pressure in front is injurious. Now, I believe, it is admitted as a general rule, that when the foot comes to the ground the internal parts fall backwards and downwards. They must draw the whole of the anterior part upwards and for-

wards, and, therefore, there can be no pressure on the anterior portion of the wall. And, again, as it regards the clip, I noticed that the portion which is removed from the hoof for the insertion of this clip is very little more than an ordinary nail would remove.

I certainly think, from what I have heard, that there has been rather a hasty view taken of it. It is true there are many objections to it. One advanced by Mr. Henderson was, I think, a very strong one,—that of the horse cutting. But, I believe, it was stated in reply, that a horse that had been in the habit of cutting himself ceased to do so on wearing this shoe.

I think it may be applied much easier than a shoe with nails, and it is impossible for the shoe to come off when the foot is on the ground. Then, again, when it is upon the ground, the spring of the crust will press this portion against the clips, and make it perfectly tight; so that I think it has been condemned rather too quickly by many who have spoken this evening.

Mr. Sievier.—I ought to apologize for presuming to say a single word, not being in the veterinary art myself; but I think you are arguing a great deal without reference to facts. The great division of opinion seems now to be respecting the expansion and contraction of the foot. It seems that there are almost as many who think there is no expansion as those who maintain that there is.

I was going to suggest a means for ascertaining the fact; for I think if that point was settled you might know whether the foot should be confined or not. I would wrap a fine line round the foot, and when the horse was in action you would see whether it broke. Or you might tie it in a knot, and, if the foot expanded, it would draw the knot. I throw this out as a hint. You are aware that the experiment has been tried on a gun-barrel. If you tie a thread tight round it, it expands and bursts it. You might thus, with a little trouble, find out the exact amount of expansion of the foot.

Some gentlemen have spoken of the expense: I intend to have my own horse shod on this plan, and there is a Frenchman who has agreed to do it for 1*s.* per shoe. There is a person in Chancery-lane who undertakes to shoe them for that price.

The President.—In answer to the observations of Mr. Sievier, which are ingenious, and for which we are much obliged to him, I would state that there are not by far so many in the profession who are of opinion that there is no expansion of the hoof, as that there is considerable expansion. But means have been had recourse to for ascertaining the fact. Casts have been taken of the foot in the hand, and the same foot when the weight of the body was thrown upon it, and the latter has been found to be the largest. Callipers have been applied to the foot on the ground, and the

same foot in the hand—I am not giving my own experience, but the experiments of others—and it has been found that the distance was not so great from quarter to quarter when the foot was in the air as when on the ground. This is not a subject, therefore, which has escaped the members of the profession; in fact, it has been deeply considered by them, although I do not recollect that the ingenious mode of passing a band round the foot, and which in itself would be very conclusive, has been resorted to. I think, as a general rule, the members of our profession are of opinion that there is a decided expansion of the foot when the weight of the body is thrown upon it.

Mr. Faulkner.—I agree with Mr. Turner and Mr. Henderson in their objections to these shoes; but I would suggest that, where it is necessary to move a horse from one place to another, it would be advantageous to use the one with the screw instead of the repeated application of nails.

Mr. Simonds.—It cannot be expected that I shall make many observations at this time of the evening, but, as I may not have another opportunity, I will hazard a remark or two. Though I agree with the majority of the statements made by Messrs. Turner and Henderson as to the interference of these clips with the expansion of the foot, yet I do not quite go to the great length which they do. If it is not absolutely necessary to bring these clips into contact with the crust, I do not see that there is that weighty objection against them which has been urged. I believe that the foot expands at the time that it comes to the ground, and that then it may be brought in contact with the clip, and cannot expand beyond it. But it appears to me that a great objection to the use of the shoe arises from the application of the band immediately around the central part of the crust, where the crust is thinnest, and where more expansion takes place than on the ground surface of the foot. Mr. Turner made serious objections to these stays. One of them was that they would wear into the foot, and he brought forward the tip as an instance. After it had been applied for three weeks or a month it was found necessary to remove it, in consequence of its working into the crust. But at what point did this take place? At the very extremity. The weight is here spread by a continuation of the shoe beyond that clip, and consequently it would not so soon, if at all, wear into the crust so as to do harm.

The greatest objection which I see to the shoe is, this band of iron passing from the one ear of the shoe to the other, and going over the very centre of the foot where the horn is most elastic, and there is the great lateral expansion. I fear the evil which

will result will be something like chronic laminitis, and that we may have an obliteration of the beautiful plates inside the foot. When a horse has received an injury from being pricked, we know that in examining his foot after he has been a long time shod, even if the nail has not penetrated the sensible parts of the foot, yet we find a considerable destruction of the horny and sensible laminæ, without suppuration having taken place.

I fully agree with an observation which fell from Mr. Henderson—I think it is one of the most forcible objections which I have heard against the shoe—namely, that it is almost impossible for a horse to be prevented from cutting his opposite leg when he has a tendency thus to injure himself. He called our attention especially to many horses cutting with their hoofs; and where they do that, here is an additional iron, something like the sharp edge of a knife, coming in contact with the opposite joint; and if we attempt to get rid of that, we must put the ear of the shoe in contact with the horn, and then we at once interfere with the lateral expansion of the crust.

The fact of the shoe continuing on the foot appears by some to be doubted, but Mr. Charles seems to think that the horse would as soon part with his leg as with his shoe. I believe that it has been found secure.

There may be something urged against the appearance of it, and some have made an objection to the expense. If, however, a horse can be shod, as Mr. Sievier says, at a shilling per shoe, that is much below the usual price charged for shoeing. But I cannot go to the great length which Mr. Turner does in objecting to this shoe. If these clips are brought into contact with the horn, they must fetter the foot more than the ordinary or common nailed shoe; and if they are not brought in contact with it, there is danger of the horse striking the opposite leg with them: but in certain feet where it is practicable to apply these shoes we have got rid of all the splitting of the hoof by the introduction of nails; and in such a case, I think the horse might work with a degree of comfort and safety to himself.

That the shoe admits of such an expansion of the foot as the unilateral shoe, I can never conceive. I think that we ought to compare it with the best and most improved method of shoeing, which is by the unilateral shoe, and, put in competition with that, it at present falls very far below it.

Mr. Braby.—I have made every possible examination of the shoe, but I found so many objections to it, that I thought a trial of it would be almost useless. One of the principal objections I had to it arose from the two clips placed on that part of the foot which

does expand, and, by their position there, having a tendency to cramp it. Once take away the expansion of the foot, and the horse will be eternally cutting himself.

With heavy horses, for which the patentee considers they would answer extremely well, I think he is not aware of the extreme weight of iron which we are obliged to put on their feet; and these shoes are kept on only by the difference in circumference between the upper and lower part of the foot, thus acting as a hoop on a butt. The hoof also is kept in that particular position, principally, by two small studs at the bottom of the foot, and those small studs cannot go far up into the hoof, yet they prevent the foot from giving forward. Almost any exertion, when these heavy horses are getting over the stones, would tend to knock the shoe forward, and I consider it would fall off immediately. I should say it was less adapted for the cart-horse than any other horse in the metropolis; and I think that in six horses out of ten we should not get it to hold on at all, from the repeated nailings to which their feet have been subjected, and by which the bottom of the foot has become not so large as it is higher up. The horses that have not been shod at all might, perhaps, commence with it.

The President.—At the commencement of the discussion this evening upon this novel and interesting subject, I intended to offer some observations of my own with regard to the application of this shoe to the foot of the horse, and also with regard to the principle by means of which we should be governed in its use. But at this late hour I should not be warranted in occupying your time, and I shall, therefore, reserve myself for some future opportunity.

I have merely to state in the conclusion of the discussion of this evening, that we, as members of this Association, feel ourselves indebted to the gentleman who has favoured us with an opportunity of seeing his interesting and novel invention. We have all come here as members of the veterinary profession, with an anxious desire to adopt those measures, suggested by any individual, which shall be calculated to relieve the sufferings of that noble animal, the horse; and, therefore, although there have been some very caustic strictures passed upon these shoes, as he might naturally have expected, yet he will bear in mind that truth will ultimately be predominant. Any improvement at the present day is sure to meet with many objections, and will have some difficulty in making its way.

Notwithstanding the objections advanced by Mr. Turner, Mr. Henderson, and other gentlemen,—I think that, if the application of the shoe to the foot of the horse is proved to be of use to the animal in protecting him from attrition with the ground, and avoiding the injury occasioned by the fetter commonly applied to the sensitive parts within; and I am sure that the gentlemen who

have expressed their sentiments to-night will be ready to throw aside those prejudices, and to adopt the plan submitted to us by the gentleman who has introduced the subject. The system must stand on its own basis. If it is a correct system, it will be brought into use notwithstanding the prejudices encountered in its application. Some of these prejudices have been advanced this evening; and although it was right that they should be adduced, still I am sure that they will not unduly prejudice any mind. I think we should take a strictly practical view of the subject. We should determine on the feet to which the shoes ought to be applied, and carefully examine the mechanical ingenuity displayed in their application. If this shoe surpasses the application of that which is generally employed, it will come into general use; if not, it will fall to the ground, and occupy a position in common with many which have been occasionally placed on the table for the purpose of illustrating the various modes of shoeing that have been introduced, and not a few of which have proved perfect failures.

If I had invented this shoe, I should have said, "This iron defence is not intended to be put on the foot of a horse that has been shod one or two years; it should never be worn except by one that never has had a shoe on." In my opinion, that is the only fair test the shoe can be put to.

I have had a horse shod at the College this morning that was lame before these shoes were put on. Some of you saw him, and he seemed to me to go as well in these shoes as the others. I should say they are more applicable to the fore feet than to the hind. I do not think that we should join in a sweeping condemnation to the shoe until we have tried it more. I am of opinion that, generally speaking, we go too far in our notions with regard to the expansion of the foot of the horse; and I think, if Mr. Charles is not altogether right, he is not a great way from it.

The thanks of the Association were presented to M. de Gournay, and the meeting adjourned.

MAY 5, 1840.

The President in the Chair.

Professor Lessaigne, of Alfort; Professor Rainard, of Lyons; and Professor Mazza, of Naples, were elected Honorary Associates.

Messrs. Pooley, Yaule, and Norman, students, were elected Members.

A splendid specimen of the Ruptured Liver of a Horse was laid upon the table by Mr. Woodger, of which he gave the following description.

On Wednesday morning last I was called to see the horse from

which this specimen was taken. He was first observed to be ill on Tuesday afternoon as he was drawing a load over some gravel. His owners had not had him above a month, and, from the difficulty attending respiration, they thought he was a roarer. He was attacked with rigors and a running at the nostrils, resembling inflammatory catarrh, which I at first thought it was. I gave him some febrifuge medicine, and a small dose of aloes. The owner wished to have him bled; but I said it would not be proper at that time, but I would decide about it when the rigor was over. I covered him up, and afterwards I bled him; this was done more to satisfy the owner than because I expected any good result from it. When I had taken two quarts of blood from him, he began to get very faint; and in about three minutes afterwards fell down on his abdomen, and then turned on his back, as if he had an attack of spasmodic colic, and was apparently in great pain.

When we got him up again, I found that he could not see, nor did his vision afterwards return. I administered some tonic medicine acidulated with sulphuric acid, and told the owner that I expected it was a rupture of a bloodvessel. The membrane of the eye was perfectly white, and whenever I held up his head to give him a draught he pitched head foremost.

I was now quite satisfied as to the case, and, consulting with Mr. Spooner and Mr. Morton, they perfectly agreed with me. From this period the horse had nothing, and, indeed, would take nothing but water, and he stood with his hinder quarters on the highest part of the box, and his head hanging down. His pulse was very full and hard.

Being assured that the case was altogether hopeless, we took, as an experiment, five quarts of blood from him: he became very faint, fell down, and died in a few minutes. The description of the morbid parts I leave in far better hands than mine.

The President.—Gentlemen, the morbid specimen on the table was taken from the horse, a description of whose case you have just heard from Mr. Woodger. It appears to be one of those peculiar cases of chronic disease of the liver, accompanied by an enlargement of that organ to more than five times its natural bulk, and with a total alteration in its peritoneal tunic and parenchymatous structure. On cutting into it, it is evidently softened, the granular texture being almost entirely destroyed. There is also within the investiture some pus, and an immense mass of coagulated blood, which has evidently escaped from the large vessels ramifying within the substance of the liver. You will, likewise, notice that the peritoneal tunic has, at the place where I have cut into it, been ruptured previous to death, in consequence of which there would

be some escape of blood into the cavity of the abdomen, but perhaps not much.

You will also observe the ease with which the peritoneal coat may be separated from the parenchymatous substance. You perceive that the texture of the organ is perfectly destroyed, and has assumed that peculiar state designated *ramollissement*. It is clear that this disease had existed for a considerable period previous to the symptoms related by Mr. Woodger, for a portion of the abdominal face of the diaphragm adheres to the convex surface of the liver. These extensive adhesions prove that there must have been chronic inflammation of the peritoneal surface of the liver, and, lymph being effused, adhesion took place between the liver and diaphragm.

From the symptoms related by Mr. Woodger, this is a case upon which there would be little difficulty, previous to the death of the animal, in determining that there was internal hæmorrhage. The great difficulty of breathing, the pallid state of the mucous membranes, would be conclusive: but in addition to this is, the perfect loss of vision, not arising from any opaque substance impeding the passage of the rays of light, but the paralyzed state of the optic nerve, in consequence of the brain not being supplied with blood to impart to the nerves proceeding from it a proper degree of energy. This animal was blind from amaurosis. I presume it assumed a glazed appearance, with the pupil fixed?

Mr. Woodger.—It did.

The President.—This is a symptom which is very common in animals that die from hæmorrhage.

On examining the intestines, we find them to be of a yellow hue throughout the peritoneal, the muscular, and mucous coats. All of the other textures of the body presented a similar appearance. It becomes a question how this yellow appearance was communicated to these tissues; whether it arose from the bile being absorbed by means of the lymphatic system, and conveyed into the blood; or whether the liver, thus diseased, possesses not a power of separating the bile from the blood, and thus allowing it to pass on by means of the hepatic veins into the posterior vena cava. I am of opinion that the latter is the case, and that the yellowness of the textures, arising from a disease of this kind existing in the liver, is the result of imperfectly formed bile being taken up by the hepatic vessels, and conveyed into the venous system.

Although there has not been an escape of much blood into the cavity of the abdomen, yet there is an immense coagulum, which shews that the disease must have been going on for a considerable period. The most remarkable fact is, that an organ like the liver

should be so extensively diseased, and the symptoms apparent only a few days previous to the death of the animal. This, however, only tends to convince us of the fact of different organs being enabled to withstand the effects arising from chronic disease; whereas disease of an acute character is attended by very different results. Even on the brain itself, as I have before stated, an organ on which, if the least pressure is suddenly made, death will often ensue, we frequently meet with certain enlargements that have been forming during several months, unattended by any remarkable symptom, until, after a certain period, when they assume a more rapid growth, and are followed by death. Such was the case with the organ of disease of which this animal perished.

One circumstance connected with the symptoms related in this case is worthy of remark, and that is the fact of the horse holding his head in a dependent position, and while the head was in that position, the pulse at the artery throbbing, and the artery itself being distended; but when the head was elevated, the pulse being altogether lost, or, in other words, imperceptible to the touch.

Mr. Daws.—Such a specimen of diseased liver as that before you is certainly not often met with; yet old horses that are disposed to much fat and are of a plethoric habit are oftenest the subjects of this complaint, which often exists a long time before it is suspected.

As to the absorption of bile into the system, I perfectly agree with the President; and in a late case of diseased liver which came under my notice the alvine dejections were nearly white, at least they were not at all tinged with bile, and much resembled chalk and water. The bowels were acted upon by means of aperient medicine, but that produced no effect on the colour of the fæces, and the case ultimately proved to be one of those in which it is seldom that treatment is of any avail.

The urine, in the case to which I have alluded, was much tinged with bile; in fact, it might have been said to have been bile itself. I think that the kidneys are generally affected in a secondary degree, in consequence of the digestive organs being out of order.

The amaurotic state of the eye is likewise a usual concomitant of the disease. I have a case of diseased liver at present under treatment. The horse was brought under my notice about a week or ten days ago. It presented the usual symptoms which Mr. Woodger has described. The frequent and profuse perspirations, the inclination to hold his head almost to the ground, and the frequent sighing and tendency to fall down. His pulse was about 68, but exceedingly feeble—I could scarcely detect it. The mucous membranes were as pallid as a sheet of writing paper.

I ordered rest, and a little aperient medicine; and, for the present, the horse seems relieved. He is very aged, and I have no doubt that ere long, if put to active work, he will suddenly fall down dead from rupture of the liver.

It has been frequently said that in this disease we should not detract blood. I cannot altogether agree with this. It would be almost quackery to say that we should not do this or that in the treatment of any disease. I think that we may occasionally bleed moderately but prudently, and only in cases in which the symptoms warrant the use of the lancet. Generally speaking, if

we detract blood where there is a very feeble pulse, the animal is sure to die, and that sooner than if we had not abstracted blood.

Mr. Braby would ask Mr. Woodger whether the horse had been labouring under apparent disease any length of time, and whether it was a dray-horse?

Mr. Woodger.—The owner had not had him above five weeks. When they have fresh horses they like them to have a dose of physic. I gave him a dose of aloes, but it had no effect. They wished me to repeat the dose, but I would not; and, very fortunately, I adhered to my determination. The horse worked up to last Tuesday—he was then taken ill while drawing a heavy load. It had been observed previous to this that he was a little thick-winded. On the Wednesday morning I saw him, and found him in the state I have described. I said I was afraid of hemorrhage having taken place. I was quite satisfied before I bled him that he would not lose much blood.

Mr. Braby.—My motive in asking the question was, that I have under my care this particular species of horse, the very heavy dray-horse, and I find that they are more frequently the subjects of diseased liver than any other kind of horse. Within six months I have had three of these cases. The last, indeed, was not properly under my care. I was sent for, but ere I could get to him the horse was dead. In the case before that, the horse was unwell, but they were still working him a little every day. From the appearance which he presented, I had no doubt that he had diseased liver. I ordered him some laxative medicine, and bled him; the state of the pulse indicating the necessity of bleeding. The horse apparently got better. He fed better, and did well for about a fortnight. At the expiration of that period I was sent for in a great hurry. The horse's respiration had much increased; he had fallen down, and could not get up again. I saw at once that the liver was ruptured, for the animal presented all those appearances which I have just heard you describe, particularly the dilated pupil, with loss of vision, a very weak pulse, and the holding of the head down.

I perfectly agree with you, Mr President, that this is a disease which often exists for a very considerable length of time, and that rupture of the liver may also exist a long time; but when the continuity of the peritoneal covering of that organ is destroyed, death is close at had. It frequently happens that horses in whom no illness has been observed, when taken to work, suddenly drop and die of ruptured liver.

Mr. Daws.—I would ask Mr. Braby if he has ever observed in the horses that thus die, that the limbs have not become stiff after death, or at least they have remained relaxed for a very considerable time.

Mr. Braby.—I have not noticed this particularly; but during the last case I had, I happened to meet Mr. Sewell at the knackers, and we remarked the flaccid state of the limbs.

Mr. Daws.—It is with these horses as with others that die a violent or sudden death. The knackers have often said that these horses spoil much sooner than others. It may, perhaps, be owing to some chemical action of the bile on the muscular tissue.

Mr. Braby.—Have you noticed a particular state of pulse before the act of rupture has taken place? It is a kind of double pulse, very feeble; one beat tolerably strong, and the other like an echo of the first, and exceedingly feeble. I have noticed it in several instances, and, perhaps, eight or ten hours before the horses died. When the rupture has actually taken place, the pulse is scarcely perceptible.

Mr. Daws.—The pulse of an animal labouring under this disease presents very different characters. Sometimes it is feeble, sometimes full, and the head is dependent; but, previous to the rupture of the peritoneal coat taking

place, we generally have a sharper pulse, much resembling what you have described.

Mr. Ernes.—May I be allowed to ask the mode of dieting these horses? Mr. Braby has said that a peculiar description of horse is more subject to this disease than other horses. The reason that I make the inquiry is, that I have thought it connected with the want of sufficient water. I know that on the continent this is the case. In Flanders I have seen horses equally fat as the horses here, and quite as powerful animals. I know very well that, in the human subject, drink produces a contrary effect, and the liver generally becomes diseased in consequence of excess: perhaps the two extremes might produce the same effect.

Mr. Braby.—I have noticed that it has occurred in those horses which are very highly fed and heavily worked, and very rarely in thin and emaciated ones; or, if it does, those horses have, at some prior time, been fat and plethoric. Those which have come under my notice have been almost unlimited in their supply of water. They are backwards and forwards to the establishment four or five times a-day, and each time they go to the trough and take as much water as they like.

The Secretary.—The peculiar state of the muscles adverted to by Mr. Daws, with the ready tendency to decomposition of the carcass, I should not attribute to the non-separation of the biliary secretion from the blood, thus producing an action on the muscular tissue, but to an exhaustion of nervous energy.

The theory which the President has advanced respecting the bile being imperfectly formed, and not thrown into the intestinal tube by its common channel or duct, is borne out by the well known fact that when the kidneys are separated from the body, or when from disease, they are unable to perform their functions, the peculiar proximate principle, *urea*, can be traced or met with in the blood.

Mr. Twinberrow.—I wish to ask Mr. Braby whether his horses have warm or cold water?

Mr. Braby.—That depends on the season of the year. In winter and in extremely hot weather it has the chill taken off. The reason is this,—in hot weather, horses returning in a state of violent perspiration, and drinking cold water, would very likely experience a determination of blood to the intestines, or some internal disease. In winter it is done principally because it should not freeze, but I imagine that the most benefit is derived from the adoption of this course in summer time. When horses are labouring under disease, it is always my practice to order the chill to be taken off the water.

The President.—I will now direct your attention to the Lungs, Trachea, &c., of a Horse kindly forwarded to the Association by Mr. Mavor, in order that we might have an opportunity of observing the abnormal state of the respiratory organs. Mr. Mavor, jun., being present, I shall be enabled to elicit some particulars from him respecting the case. The horse had been in Mr. Mavor's possession several years, during the whole of which period he was considered a very bad broken-winded horse, as it is commonly designated.

Mr. Mavor.—He was rather a remarkable animal, having carried one of our general officers in the field of Waterloo. Besides being broken-winded, he had symptoms of a chronic diseased state

of the windpipe, there being great difficulty of respiration, and this evinced more in the expiratory effort than the inspiratory. He has been at work for a few months in the season.

The President.—The term "broken wind" is one which I am in the habit of quarrelling with, as being a most ridiculous one, and calculated to lead to very erroneous ideas respecting the nature of the disease to which it is generally applied. Broken wind has been generally described as referrible to a rupture of the air cells of the lungs—the minute termination of the bronchial tubes. These cells, in consequence of some violent exertion and the sudden rushing in or out of the air, become, they say, ruptured, and, consequently, an extravasation of air takes place into the cellular substance of the lungs, and on this account it has been designated broken wind.

Others state that it is a term applied to this disease consequent on the fact of its being generally attended by the act of *breaking wind* backwards; and I think the one is just as consistent a view of the case as the other.

Speaking of rupture of the air cells, Mr. Coleman has stated that it does actually exist in this disease, and therefore the term is a proper one.

I know scarcely any disease to which the horse is subject in which we meet with greater differences in the abnormal state of the respiratory organs after death; and we are not to be surprised at this, for almost all horses that labour under a difficulty of respiration—unless it is accompanied by a roaring noise—are said to be broken-winded. Ninety-nine persons out of a hundred (I do not, of course, include veterinary surgeons, but persons acquainted with horses), in any disease affecting the respiratory action which is not attended with a roaring noise, say that the animal is broken-winded; and if he makes a roaring noise, he is called "a roarer." Therefore I am not surprised at the peculiarities which present themselves to us in organs after death which are said to be taken from horses labouring under this disease.

What I understand by the term "broken wind" is a disease that is attended by the following indications. It is a disease of the respiratory apparatus, wherein there appears to be a greater difficulty in the act of expiration than in that of inspiration, and where this difficulty is evinced by a prolonged and laboured action of the abdominal muscles. Seeing the horse, when in a state of quietude, and then attending to the act of expiration, you will observe the flanks gradually raised by a short and sudden action of certain muscles, and then, with apparently a double effort, they fall. The muscles of inspiration are those which expand the chest, and the air then rushing into the lungs, occupies and fills them.

Expiration is a difficult, prolonged, and laboured effort. Broken wind is generally attended with some cough, arising from a degree of irritability existing in the mucous membrane lining the air passages, more particularly those portions belonging to the trachea and bronchi. The cough is a peculiar one, arising from the fact before stated—the difficulty in the process of expiration; and it becomes a hollow, lengthened, laboured cough, not a sound, sonorous one such as is met with when the lungs and other parts of the respiratory system are in a healthy state.

A variety of opinions have been advanced as to the cause of broken wind; some referring it to the digestive apparatus, others to a peculiar state of the lungs, but not agreeing as to what that peculiar state really is.

With regard to the lungs. We generally find that the lungs taken from a broken-winded horse after death are larger than those from a horse in health, and they are of less specific gravity and of a more pallid hue; also on cutting into them we find that this pallid appearance is not confined merely to the outer surface, but generally pervades the whole parenchyma.

We likewise very frequently notice on different parts of them projections of the pleura pulmonalis or outer pleural covering, forming what are vulgarly termed "air bladders," but technically designated "emphysema." It is stated by Professor Coleman that emphysema, formed by the rising up of the pleural membrane, and the deposit of air in the cellular substance beneath, is produced by the air, when it has been inhaled, escaping into the air-cells, and, by its pressure, causing the pleura thus to expand; but, at a very early period of my professional career, reflecting upon this, I thought that if such was the degree of pressure going on in the lungs during respiration—if there was, indeed, an escape of air into the cellular uniting tissue sufficiently powerful to elevate the pleura from the outer surface of the lungs—the degree of force would be so great, that it would not only elevate the pleura, but would be almost certain to rupture it, or at least it would be attended with more extensive projections of this kind than we were in the habit of observing.

I believe that the gaseous fluid we meet with within the cellular substance beneath the pleura in this case, is a secretion by vessels ramifying there, and not inhaled air, which has escaped from the bronchial tubes into the air-cells.

The question now comes, on what does this peculiar difficulty of respiration and the pallid state of the lungs depend? I reply, that I can readily conceive that, in order to perform the act of expiration with facility, it is requisite that the lungs themselves, in addition to the walls of the chest, should be brought into more active use

than in the office of inspiration. In other words, I believe the lungs to be more active in the expiratory effort than in the inspiratory. They are comparatively passive in inspiration. The walls of the chest, by the action of the abdominal muscles and the diaphragm, become expanded, and air from without rushing in fills them; but when the air has got into them, and those organs have become debilitated, arising, perhaps, from repeated attacks of inflammation or severe exertion, the lungs, like all other tissues in the body, lose that power of contractility which they formerly possessed. The muscular membrane of the air tubes also become weakened, and thus lose the power with which they are by nature endowed to assist in expiration.

We now see how it is that the aid of the abdominal muscles is more particularly required in order to unload the lungs of the air that has passed into them from the atmosphere. In a broken-winded horse this may be considered as more particularly marked; the action of the abdominal muscles rising higher than usual, and pressing the viscera of the abdomen against the walls of the diaphragm, thus assisting in emptying the chest of its contents.

This difficulty of the expiratory effort, however, may arise from other causes as well as from debility or loss of resiliency in the substance of the lung itself. It may be produced by some impediment in the bronchial tubes, or from some peculiarity of structure in the trachea, and in such cases the difficulty of respiration is attended with a peculiar noise which is readily heard, and which constitutes that common disease vulgarly called "roaring." Now I would ask Mr. Mavor if this horse was ever known to roar in his respiration?

Mr. Mavor.—Not that I am aware of.

The President.—Because these lungs not only present those peculiar appearances which I have pointed out—the enlargement, the pallid hue, and the emphysematous projections—but they also exhibit a peculiar malformation of the tracheal tube. You will see that this part of the trachea where it bifurcates into the bronchi, and is distributed into the substance of the lungs, is flattened out instead of the rings overlapping each other, as they should do. They have been apparently torn asunder, and this irregularity extends for a considerable distance up the tube, and must have offered an impediment to expiration and to inspiration also.

A little farther up there are other abnormal appearances: the rings of the trachea, five or six inches below the larynx, are separated altogether, instead of lapping over each other, so that by these means the tubular form is very materially altered. I should say, that this of itself, independent of the appearance of the lungs, would go far to account for the difficulty of respiration in this animal.

On cutting into the trachea, we find that the muscular coat is also pale, although we do not perceive it so well by this light as in the day.

It certainly may be the case, that, on taking the lungs out of any very old animal, we should find emphysema. I have frequently found it, and yet such animals have not been positively broken-winded. I am inclined very much to think that the difficulty of respiration in this horse arose from the peculiar malformation of the trachea.

This is certainly a very interesting case, as is that introduced by Mr. Woodger, and it is right that we should avail ourselves of every opportunity of observing the abnormal state of parts after death; for it is only from inferences drawn from such cases that we shall be directed to a correct mode of treating disease. We are indebted to these gentlemen for their kindness.

The following Essay was then read,

ON THE TREATMENT OF OPEN JOINTS.

By Mr. HENRY ROWE STEVENS, *V.S., of Newmarket.*

The subject of the following Thesis is a mode of treating open joints, which I have successfully practised on several occasions.

Theories are more easy to be drawn, and more brilliant than plain matter of fact observations, but it is by careful observation alone that science can be enriched. A single fact is sometimes sufficient to demolish a whole system. The principal object, therefore, of an inquirer after truth is to multiply observations. These are the sentiments of a celebrated French writer, and I think them peculiarly applicable to the veterinary surgeon. I have endeavoured to act under this impression, and you have some of the first fruits of my labour.

I would first speak of the disease in question and its varieties.

Open joints are occasioned by a variety of accidents, causing wounds into the joints of very different characters. The hock-joint is often opened by a kick, especially on the inside, or a puncture from a fork. The knees, fetlocks, and stifle-joints, are also liable to be lacerated by falls, &c.

A wound of the stifle-joint has always been considered the most difficult of treatment, from the impossibility of applying pressure, especially when attended by a loss of substance. The hock is a difficult joint to treat, from the same cause; and the knee the most easy, from the circumstance of pressure being so readily applied.

By the mode of treatment which I have adopted, all the various

kinds of open-joints are generally easy to be managed, or the only difficulty is in proportion to the orifice in the joint.

As to the treatment, if it is a knee, in order to avoid the necessity for slinging, which is sometimes resorted to in bad cases, I have made use of a boot, which, after properly fomenting and cleansing the wound, and removing the ragged edges, and approximating the divided parts as closely as possible, keeps the joint in a suitably quiet state, and nothing more is done for the first day or two. By this means the magnitude of the synovial discharge is ascertained, and coagulable lymph is thrown out of the minute wounded vessels, and forms a kind of coating over the parts for the application I am about to mention to act upon.

After this, the use of the principal agent, "lime," may commence. It is to be reduced, by the action of the air only, to a fine powder, a sufficient quantity of which is to be used to soak up the discharged synovia; and the application should be repeated whenever the discharge is seen exuding through the lime, which will probably be twenty times a-day at first, but, by persevering in its use, it will be required less and less frequently.

A dose of physic should be invariably administered, and, in some cases, bleeding may be necessary; but these must be left to the discretion of the practitioner.

This is the sum total of what I have to communicate as to treatment, and applicable to every variety of case; with this exception, that in the hock, where the limb cannot be kept so perfectly quiet as in a knee case, a patten shoe must be employed, and the rack-chain used until the wound commences closing, when, if requisite, the animal may be allowed a night's rest occasionally without the dread of any ill consequence. It will, therefore, be understood, that as great a state of quietude for the affected limb must be obtained as possible, and, then, the application of the lime, with patience, is the whole of the treatment required. "Curationes hæ sunt."

Lastly, as to the action of the lime in performing the cure. By combining with the discharged synovia it forms a plug to the wound, and, in hardening, acts also by its pressure. It likewise, from its disinfectant property, keeps the wound in a clean and healthy state, and, without acting as a caustic, excites the extreme of adhesive inflammation; so that, as soon as granulations are formed on the edges of the wound sufficient to approximate them, they unite by the adhesive inflammation set up by the lime, and the case is cured. The admission of air into a joint must doubtless occasion great pain to the suffering animal, but that is effectually prevented by the caking of the lime over the wound.

I have thus made you acquainted with my mode of treatment, and with my, perhaps, vague ideas as to the modus operandi of

the lime. In order to strengthen, however, what I have adduced, and to shew my own firm conviction that, supposing the bone to be uninjured, there are very few cases, of however long standing, that this method of cure will not reach, I beg to relate two cases of open hock-joint, which occurred in my practice, and in the first of which I was brought acquainted with the efficacy of the lime.

CASE I, *Aug.* 9, 1839.—I was summoned to attend a brown six-year-old horse, belonging to a coach-proprietor, that had, two days before, received a violent kick on the inside of the near hock, and notwithstanding which, had been worked a six-mile stage and back. I found the synovia escaping from the wound every time the horse moved his leg. I at once pronounced that it was a case of open joint. The horse was immediately sent to my stables, where I applied a patten shoe, and gave physic, &c.

From that until the 20th of September I tried, without success, every mode of treatment that I could devise,—the actual cautery, pressure, armenian bole and resin, corrosive sublimate, &c., &c., when I accidentally observed the peculiar action of slacked lime, which I immediately applied to the hock. It had then become double its natural size—the poor animal had been reduced by the extreme pain almost to a skeleton, and had not put his foot to the ground for more than a week. The lime acted as it were by magic, and the discharge entirely ceased in four days. I then began to foment the part, in order to abate the inflammation, and also gave a dose of physic, still more to ensure success. After a few days he was blistered, which was repeated in about a week, when the animal was turned into a paddock during the day, by which means he gradually recovered, and went to work perfectly sound on the 20th of October. The hock had begun to decrease and has continued so to do until it has resumed its natural size and form.

CASE II.—This was also a hock case. It occurred a little after my first use of the lime, and was difficult to treat. It was a Suffolk cart-horse, and the wound in the hock proceeded likewise from a kick. It was deeply cut, and the synovia flowed very freely. I pursued the same course of treatment with him as with the other horse for about a fortnight, when I commenced the use of the lime, which completely stopped the discharge in three days. There was very little swelling in this case, and, consequently, I did not blister. The wound speedily healed, and the horse was sent to work.

I shall be happy at any future time to send to the Association some other interesting cases, but I consider these sufficient for my present purpose.

The Secretary said that in some degree he could substantiate

the statements made by Mr. Stevens, of the good effects likely to follow the use of lime in open joints. He confessed that there was a time when, had he been asked what he thought of it as a remedy, he should have said at once that he feared it would prove too powerful, by acting as a caustic. He, however, had tried it, and had not found this to be its operation to any great extent. A coagulation of the synovia is effected by it, and healthy granulations are quickly thrown out, which close the opening.

The case in which he had tried it must be in the remembrance of most of the gentlemen present. It was that of a large roan-colour cart-horse which had received an injury on its near hind fetlock. He had been under treatment for three months previous to admission into the infirmary. When admitted, there existed two or three openings on the outside of the fetlock, which poured out a considerable quantity of synovia. The pain was great, and the constitution sympathized; the pulse and respiration being accelerated, and the mucous tissues highly injected.

At first, astringent poultices, made of linseed meal and alum, were employed, the diet restricted to mashes, and a purgative administered.

On the third day after admission, two larger openings made their appearance on the inside of the joint, from which synovia also escaped. The pain became even greater, and the limb was held in a flexed position.

Although the case was now thought to be a hopeless one, it was nevertheless determined that a trial of the influence of lime upon the wounds should be made, according to the suggestion of Mr. Stevens. It was freely applied over all the wounds, taking care to render it anhydrous, by making the mass of lime red hot, and keeping it in this state for some time before it was pulverized. A light bandage was then applied over the whole*.

On the third day after its application, a very favourable change was perceptible in the state of the wounds. Those on the outside presented an healthy aspect, and their edges were contracting, while the quantity of synovia that escaped had become less. The two on the inside, however, had coalesced, thus making one large opening, and the cavity was deep: the pain was evidently great, but there was less constitutional disturbance. The same treatment was directed to be continued.

* In this respect the treatment differed from that recommended by Mr. Stevens, he using the *hydrate* of lime. And this, perhaps, will account for the caustic action which subsequently was seen to take place; since many of this class of therapeutics owe their property to the great affinity they have for water, the elements of which they abstract from the animal matter, and thus cause its destruction.

At the close of the seventh day, the wounds on the outside of the joint had nearly healed, and all discharge of synovia had consequently ceased. The wound on the inside exhibited a favourable appearance, and granulations were fast filling up its cavity. The dressings were applied daily as before ordered.

On the 14th day, the wounds on the outside had healed; that on the inside had ceased to discharge, and the granulations were on a level with the surrounding integument, while cicatrization had commenced. It was now thought that the agent was no longer called for, and that common excitants to the wound would effect all that was required. The pain, however, from the joint was still great, and but little weight was thrown on the limb.

Five days after this, when it was hoped that all would be soon well, a small opening made its appearance contiguous to the original wound on the inside of the leg. This too poured out synovia; and then it was but too truly feared that such was the state of disorganization which had taken place in the joint, that all prospect of ultimate cure was at an end.

The lime, however, was again tried, and for a time promised a favourable result; there was, nevertheless, so much constitutional disturbance, accompanied with the expectation that, should the wound be healed, anchylosis of the joint would follow, and thus the animal be altogether useless for the purposes of draught, that the owner consented to have him destroyed.

Inspection of the parts after death confirmed the suspicions which had been entertained during life. There existed considerable inflammation and ulceration of the flexor tendons, with ulceration of the ligaments of the joint, portions of which had sloughed and hung in shreds. No ulceration of the cartilages, however, had taken place, but there was excessive inflammation about them.

Although in this instance unsuccessful, he nevertheless thought that the effects produced by the agent were such as to warrant its farther trial.

Mr. Stevens, he said, had modestly withheld the circumstance by which he became acquainted with the therapeutic action of lime; and as it appeared to him to be a proof of his observation, he (the Secretary) would relate the *accident*. Mr. Stevens was going to see the first case related by him, when a gentleman asked him to look at one of his dogs which some miscreant had blinded by throwing lime into his eye. Upon examination he perceived the eye to have been destroyed by the lime, and the eyelids firmly united by a cicatrix. The thought struck him that the lime had induced the adhesive inflammation, and, reasoning upon this, he determined upon trying its effects in the case of the open joint he

was then going to see. With the result you have been made acquainted.

The boot, or means by which the limb is prevented from being flexed, which Mr. Stevens has sent, the President thinks will speak for itself. It consists, as you perceive, of a piece of leather, to which the shape of the joint is given, by its being placed in a wet state over the part. This, which is for the knee, is strengthened by a splent at its back, and it is padded within, so that by friction the leg may not be abraded. By means of a buckle, placed above and below the knee, it is fastened on the leg, the front being open to allow of the application of the dressings. Of course, similar means may be adopted for other joints, and, perhaps, it would be as well to have such aids in readiness, obtaining the shape of the parts from sound limbs. There can be no question respecting the advantages that result from keeping the limb in such a state when a joint is opened.

The President.—The method of fixing the limb as proposed by Mr. Stevens is of some moment. Although the animal is capable of preventing the flexion of the limb to some extent, there is the action of the muscles to be overcome. A friend of mine, in cases of broken knees and when there was an open joint, used to employ a piece of deal board, putting some calico round it: but Mr. Stevens's is certainly a more surgical mode of doing the thing, and a very excellent application it is. I am sure those of you who have had opportunities of seeing open joints, must be aware that they require different modes of treatment under different circumstances. If we are to consider that an open joint merely consists of an external wound without any internal inflammation, why the only object we have in view is to heal that wound, when of course we should speedily effect a cure; but in the majority of open joints we have much internal inflammation, and, in many, the joint becomes opened from ulcerative inflammation of the synovial membrane, which extends to the capsule of the joint.

We may apply what remedies we please to some open joints, but the disease which is going on within will baffle all our endeavours. This was shewn in the case so ably drawn up by the Secretary, and which he has just read.

I confess that I was rather sceptical as to the ultimate cure, although I agree with the Secretary as to the effect of the agent on the wound.

I have heard a variety of medicaments spoken of as being sure to *cure* open joints. In those cases where there is not much internal inflammation the wounds get well by these external applications; but there are numerous cases of open joint which are not to be

cured by merely stopping up the orifice. In cases of open hock or stifle-joint, or any joints which have extensive articular surfaces, synovial inflammation will arise and spread. We may do what we like to heal them, and apparently we do so; but they will break out again afterwards.

There is a horse now in the College which came in with tumefaction of the hock, attended by slight lameness. That horse, after he had been in the establishment a few days, was found one morning so excessively lame, that he could scarcely put his foot to the ground. The hock was much enlarged, and hot to the touch—a high degree of inflammation existing in the synovial lining membrane. I bled him very largely in the thigh, and gave him active purgative medicine; and if I had not done so, the probability is that I should have had the joint opened from ulceration taking place within.

Another case occurred in this institution about a year since. A horse came in with a mere abrasion of the knee; hardly worth being called a broken knee. It was a very simple case, and we thought it would be well in a fortnight at most, and it had every appearance of being so; but at the expiration of ten days, when the horse was apparently doing well, and there was no lameness, nor any inflammation in the surrounding parts, I directed him to have walking exercise. On the following morning—whether the inflammation arose from the exercise he had taken or from hitting his knee in the box, I know not—I found the knee swollen and the animal suffering the most acute pain from synovial inflammation. We could not prevent the formation of an abscess—the joint became open, and the animal was eventually destroyed.

MAY 12, 1840.

The President in the Chair.

Mr. FAULKNER presented an Essay on the

RESULTS OF LOCAL INFLAMMATION.

[This Essay is somewhat abbreviated. The subject is an exceedingly important one—it is that with which the student should be intimately acquainted,—it is an admirable one for "a student's night;" but the general principles which it contains and illustrates must have long formed the usual routine of the surgeon's practice, and there can be little or nothing new or interesting to him. We therefore feel that we ought to comply

with the wishes of many of our readers, repeatedly and forcibly expressed, and confine a lengthened notice of these debates to papers on practical subjects; but, at the same time, due justice shall be rendered to the industry and talents of those who contribute to the interest and value of the discussions among the pupils, and to whom we look as the future supporters of the honour of our profession.—Y.]

THE first products of local or external inflammation are redness, heat, pain, and swelling. The action of the vessels of the part becomes increased, and a greater quantity of the red globules of the blood are sent to the part, and give to it a *red* hue. Another consequence of the passage of a greater quantity of blood through the capillaries is, increase of the nervous action of the part, and, hence *heat* is eliminated. The capillaries becoming distended, and pressing on the nerves, *pain* is produced, and likewise connected with the distended state of the vessels is *swelling*.

The inflammatory action of the parts continuing, they not only pour out the seriferous portion of their contents, but the coagula consisting of *fibrine*. This soon undergoes a process of organization, and adhesive inflammation is the result, and, if the parts are undisturbed, vessels permeate it in every part, and perfect adhesion is the result. This sometimes takes on the form of induration, as in tendons, contusions of soft parts, peritoneal inflammation, &c. The union of wounds is also the consequence of adhesive inflammation, the vessels in the effused lymph depositing in its substance the peculiar elements of which the parts are composed, with some exceptions, as in muscles which are united by tendinous matter, and cartilage by ligamentous. It is this bond of union which constitutes the cicatrizing of wounds. This adhesion is also one of the terminations of some inflammations, and a preventive to others.

Suppuration may be produced either by the inflammatory action continuing, or from the original injury being extensive. The vessels of the part, instead of effusing lymph, secrete pus. It is a termination peculiar to inflammations of certain parts, and not always requiring any high degree of previous action, as the mucous membranes, and particularly those of the nose and urethra. The adhesive and the suppurative inflammations sometimes alternate, at other times they oppose each other; and in many very important instances they are intimately allied, and beautifully so in the process of healing large wounds.

Mr. Faulkner was peculiarly happy in describing those terminations of local inflammation, namely, the adhesive and the suppurative, which tended to a reparation of parts, by the formation of granulations. He then described a very different process—the for-

mation of pus without granulations, or, in other words, the formation and progress, and termination of *abscesses*. An abscess may not be disposed to heal, either from the parietes being so changed or weakened as not to be able to throw out granulations—or from its being opened before it was sufficiently mature—or from the opening not being made sufficiently dependent for all the pus to be discharged—or from pressure or other means, the surface being disposed to unite by adhesion, while the secretion still went on at the bottom.

Fistulæ were next considered succinctly, but satisfactorily, with the formation and mode of treatment of *sinuses*. To this succeeded *ulceration*, or the reverse of adhesion—the gradual removal of parts, until, by some judicious treatment, the adhesive process is set up around it, and its devastation is checked. The pus which is formed at the bottom of the ulcer, which, instead of protecting, will irritate, and excite fresh and destructive inflammation in the parts,—it is not until this disposition is destroyed that healthy granulations will form, and the wound will fill up and heal.

The causes of ulceration, both predisposing and exciting, are pressure externally applied—the presence of a foreign body underneath, whether a collection of purulent matter or a diseased portion of bone—some constitutional cause, as the presence of a morbid virus in the system, as in farcy and glanders, in the one producing ulceration of the lymphatics, and in the other, of the mucous lining membrane of the air-passages, and the substance of the lungs and the lymphatic glands. The constitution may be predisposed to it from its deranged and weak state. The ulcerative process is more likely to take place in them than in others when they become inflamed; such are the mucous membranes of the eye, the mouth, and the intestines.

As to the healing of ulcers, the following general rules may apply:—The cause of irritation must be removed; local support must be given, if necessary; and the tonicity of the system must be restored. If a morbid virus is the cause, it must be destroyed, or rendered inert; and undue inflammatory action in any part must be reduced.

Mortification and Gangrene.—Mortification is usually preceded by a peculiar inflammatory process, called gangrene, during which a fluid becomes effused into the surrounding cellular tissue, which is not susceptible of coagulation, and rapidly runs on to decomposition. This speedily extends, owing to the peculiar permeable structure of the cellular tissue. This he calls the *moist* gangrene. Sometimes, however, mortification is not preceded by this gangrene, but the parts are suddenly destroyed, as when caustic is applied. The blood in the vessels and the fluids are suddenly coa-

gulated, no previous effusion taking place. This is called the dry gangrene. When mortification arises from natural causes, the best method to check it is by setting up adhesive inflammation in the neighbouring parts—lowering any excess of action around, or exciting the natural powers of resistance.

The causes of mortification are various. When, consequent on a high state of inflammation, congestion of the capillaries takes place, and a sufficient supply of arterial blood is not received to support its vitality—or when the supply going to a part from the main trunk is arrested—or when the vital powers generally are not sufficient to carry on the circulation. Parts not highly organized are very liable to mortification on the application of an injurious cause, as tendons, cartilage, bone, &c., and the whole of the frame when in a debilitated state. A vitiated state of blood will produce the same effect. Gun-shot wounds, and the application of undue stimuli, are exciting causes.

The treatment will consist in reducing excessive action, or stimulating the powers of resistance, according as circumstances indicate.

Resolution.—When this process is about to take place, the vessels cease to be distended with blood, the circulation in the part becomes equalized—the nervous derangement and excitement are removed—the effused fluid becomes absorbed; and all the parts resume their natural state. The parts, however, are left weaker, and more predisposed again to become inflamed on the application of any exciting cause. At all events, some time passes before they recover their tonicity and strength.

Metastasis.—When this takes place, the inflammation going on in an organ suddenly ceases, and attacks another, perhaps, very distant one. Thus inflammation of the lungs occasionally passes suddenly to the feet, or from the feet to the lungs. In the same way it passes from one eye to the other. Even abscess will also suddenly change its situation for one at the farthest part of the frame. There is scarcely a part of the frame that has not occasionally been thus relieved or attacked, and there is no predicating the probability of its taking place, or the region which it will next attack.

Mr. Faulkner now arrives at "*the remedial means of abating local inflammation,*" and we give his statement at length; for although it comes from a young surgeon, it contains that which concerns the more experienced practitioner.

A part or parts having become inflamed, and the usual concomitants of heat, pain, redness, and swelling being evinced, whether caused by blows, contusions, or other mechanical injuries, or by

strains, or the application of an irritant, when there is no loss or lesion of substance produced, our first attempt should be to excite resolution.

In the first place, if the case be at all serious, blood must be extracted from the part, or from a vessel going to that part, in order to relieve them from their distention. Poultices are next indicated, to excite serous exhalation from their surface. If this does not check the inflammation in the parts, and the vessels, in order to retrieve themseves, pour out the seriferous parts of their contents into the surrounding tissue, our applications must be altered, substituting for them evaporating lotions and discutients, as the liq. plumb. diacet. and water, sp. vini and water, muriate of ammonia, and vinegar. Either of these will, by their evaporation from the surface, or from their immediate effects, rob the parts of their increased heat, and thus lessen the vascular action in them, and the consequent effusion. The cold produced will also have the effect of stimulating the absorbents to take up the effused fluid, and resolution will be the result.

Sometimes, however, the inflammation not being abated, the seriferous and fibrinous parts of the blood which are effused become organized, which interstitial deposit, from the absorbents not being able to take it up, remains in the form of induration or thickening, producing the enlargements we often see around tendons and periosteal inflammation, brought on by blows, &c. The organization may either be perfect, the vessels depositing on the effused lymph the peculiar matter of which the part is composed, terminating in the formation of a perfect bony deposit; or it may be less perfect, being merely cartilaginous. The indurations around tendons are cartilago-fibrous. The more perfect the organization of the part, the greater difficulty there will be to excite the absorbents to remove it; and the longer it has been formed, the more difficulty there will be in its removal, from the same cause.

When it has been recently produced, we must try what less powerful remedies will do, as the application of the compounds of ammonia and camphor, soap liniment co., slight blisters, &c.; but when it has been long formed, and, consequently, more perfectly organized, especially those of an ossific nature, we must try what the compounds of iodine and mercury, stronger blisters, setons and firing, will do, keeping up the stimulus thus excited for a longer or shorter time, as circumstances may require. When, however, effusion and adhesive inflammation are excited in parts to produce union of surface, as in incised wounds, where there is no loss of substance, and in other parts where they seem disposed to do so, it should by no means be interrupted, as in abscesses after the matter is evacuated, sinuses, &c.; but it should be assisted by

approximating their sides, and to keep down the surrounding inflammation, to prevent the next or suppurative stage from taking place. In this case the vessels passing from one side to the other into the albuminous deposit, organizes it, and perfects their union.

Suppuration.—If, however, by the heat, pain, and tenderness of the part increasing, it becomes evident that the suppurative stage is at hand, it must by all means be promoted, as in the formation of abscesses, by the application of poultices with turpentine. When it is sufficiently advanced, by the parts giving, on pressure, evidence of a fluid underneath, and the skin has become thin and denuded of hair, an orifice must be made, and exit given to the fluid.

The cavity which is left, if not disposed to heal, must be excited to throw out granulations, and suppurate by the application of some such stimulant as lin. tereb., tinct. myrrh co.; or, if these fail, a solution of the sulphate of zinc, or diluted muriatic acid.

The filling up of wounds by granulations may be assisted by the same means. If the discharge of pus is not of a healthy character, detergent applications must be used, as acetate of copper, sulphate of copper, nitrate of silver diluted, and ointment of chloride of lime.

After the healthy suppurative and granulating action is established, and the wound is filled up, the granulations will sometimes be liable to extend beyond the surface; and they generally do so in the horse, owing to his restorative powers being so much greater; in which case they must be destroyed by the application of some escharotic, as cup. sulph., hyd. oxmur., argent. nit., or they will prevent the formation of skin on the surface, and also cicatrization as long as they are above the level. As soon as they are on a level, the application of some astringent and resinous substance will form a scab or covering for it, to protect it from foreign agents. It will also assist the cicatrizing process, by stopping the suppurative discharge, which is no longer wanted, and causing an effusion of serum on its surface.

Wounds in horses generally heal by the suppurative process, the injury being generally so extensive; or from the motion in the parts, as well as the more powerful action going on, preventing their doing so by the adhesive process.

Fistulæ and Sinuses.—The first indication in these is to remove the cause of irritation. If a diseased bone at the bottom is the source, an exfoliation of it must be produced, and the application of muriatic acid to it will, by dissolving its earthy parts, make it more easy for the process to take place. Something also may be used that will produce the death of the bone, and excite the parts around, by the absorption of the living portions, to throw it off, as

the bi-chloride of mercury. If, however, it does not seem disposed to exfoliate, the sinus must be laid open to the bottom, and then it must be removed by the forceps or saw.

If the sides of the fistula have become diseased from the long-continued irritation, the surface of them must also be removed, and healthy granulation and suppuration excited in them, the same as in common wounds.

Sometimes pus at the bottom of a fistula is the source of some irritative secretion, which, for want of a depending orifice, cannot escape. This depending orifice must be effected and the surfaces stimulated to healthy action by inserting a seton from the top to the bottom.

It may not be convenient to remove the diseased surface and cause of irritation by the knife in some parts, as in quittor, where the surface or sides of the sinus has become diseased, and the cartilage at the bottom, and sometimes also the bone. In this case they may be destroyed, and sloughing of them produced by the hyd. bi-chlorid, &c., leaving a healthy surface for the healing process to commence from. At other times, the sides of the sinus may not be diseased, merely wanting the application of some stimulant to rouse it into healthy suppurative action, such as the sulphate of zinc, nitrate of silver, or diluted muriatic or nitric acid.

As regards the suppurative action on surfaces, it seems to be the natural termination of inflammation of some membranes, as the mucous, and especially those of the head and bronchi, and is generally confined to those surfaces, not extending to the organs which they cover, and designated catarrhal. As soon as this is established the inflammation of them abates, and it should therefore by all means be encouraged by administering such remedies as promote the secretions generally, as tartrate of antimony, small doses of aloes, turpentine, &c.

The inflammation being abated, the discharge will usually cease; or, should it not, either from having been inordinate, producing a relaxation of the vessels of the parts and general debility, but seeming likely to assume a chronic form, the sulphates of copper or iron, with vegetable tonics, should here be given.

Ulceration.—When this arises from excess of inflammation in the parts, soothing applications must first be tried, in order to admit of the healing process being set up around it, and its extension prevented, and to stop the production of the bad irritating secretion from them. When the inflammation is abated by the use of linseed, carrot, turnip, and other poultices, and the parts disposed to secrete a healthy pus and form granulations, this may be promoted by the use of some stimulant and astringent application, as ung. alumin., carb. zinc., tinct. myrrh, &c.

Should the parts be weak from the long-continued action on them, they will not be disposed to take on healthy action, and the stimuli must be increased, such as a weak solution of nitrate of silver, nitric acid, or chloride of lime. It may also be assisted by the constitutional administration of remedies that will regulate the state of the system in general. If it is weak, tonics should be given; if plethoric, laxatives, diuretics, diaphoretics, &c. If the presence of a morbid virus is the cause, such remedies as will, by absorption of it into the system, render it inert, must be conjoined with the topical applications, as in farcy and glanders. In the former the diseased ulcerated surfaces must be destroyed by the bi-chloride of mercury, the nitrate of silver, or the actual cautery, and the diniodate of copper, with vegetable tonics and stimulants, must be given internally: in the latter, the topical application may be a solution of the sulphate of zinc or chlo-calcis, with the same internal remedies.

Gangrene and Mortification.—When this is induced by excessive inflammatory action terminating in congestion of the capillaries of the part, causing gangrene of it, and effusion and emphysema, the inflammatory action must be lowered by such remedies as will do so without producing debility, as the sp. nit. æth., æther, or liq. ammon. acet. When, however, the debility is already extreme, we may employ more active tonics, as bark, camphor, gentian, ginger, opium, &c.

The topical applications should be those that will stimulate the parts around to convert the gangrenous portion into a slough, and also, by their detergent and antiseptic properties, prevent its extension to the neighbouring parts, as the chlorides of lime and of soda and the nitrate of potash; a fermenting poultice of yeast and charcoal, the latter of which will, by its power of absorbing the noxious gases, prevent them from spreading into the surrounding tissue, and propagating the diseased action.

The same local remedies may be applied to wounds that have a gangrenous tendency. If the powers of the constitution are sufficiently strong to produce sloughing of the part, there will then be a healthy surface left for the perfection of the healing process; but, if this should not be the case, the symptoms of approaching death soon supervene: the pulse becomes hurried, fluttering, and then imperceptible—partial sweats cover the body—coldness extends over the extremities and the surface—there is a gradual loss of sensibility—and death closes the scene.

The President.—Gentlemen, you will have understood from the perusal of this Essay, that the author has divided it into two distinct parts; namely, the results of inflammation, and the remedial measures to be had recourse to in the treatment of those results. I think, however, that it will be better to consider the Essay as a

whole. He commences by stating that inflammation is indicated by heat, pain, and redness, followed by swelling, effusion, adhesion, suppuration, ulceration, gangrene, and mortification. He has embraced a wide field, and has given you an opportunity of questioning him on many points connected with those morbid changes which are taking place consequent on inflammation. For the purpose merely of commencing the discussion, I will ask the author how he accounts for the increased heat of those parts which are labouring under local inflammation?

Mr. Faulkner.—By the increased quantity of blood in them, and the increased action in the vessels. I have occasionally seen a purulent discharge take place from a serous cavity during life, when the operation of tapping has been resorted to. This, I think, arises from the mucous membranes being more highly organized than the serous. I am inclined to think that the blood is passing quicker through its conduits in the first stage of inflammation—not that the pulsation of the artery is quicker than the action of the heart itself; but there is an independent action in the capillaries of the part, owing to the increased nervous power which keeps up the vascular excitement; and hence the throbbing that is felt. We find, when inflammation has gone on to such an extent as to destroy the sensibility of any of the nerves of the part affected, it becomes colder; therefore I do not attribute the heat of the part altogether to the increased quantity of blood sent to it, but also to nervous influence.

It is evident that it must be extremely desirable to be able to distinguish between mere phlegmonous inflammation, suppurative inflammation, and œdema, as the external characters of these may be alike, and, perhaps, we might add to them an aneurismal tumour, in which we have external appearances strongly resembling phlegmonous inflammation. Now, when we have aneurism of an artery, we also have a pulsatory action which is synchronous with that of the heart. When there is an effusion of pus, we shall also have a sense of fluctuation; at the same time, there will be increased tenderness and pain of the part: and, generally speaking, when we have pus under the surface, there is much constitutional irritation set up.

The absence of pulsation, I think, would distinguish aneurism from the formation of pus. Another remarkable symptom, when there is a secretion of pus going on, or a collection of it taking place, is, the skin becoming thin, from pressure producing absorption of it, and a denuding of the hair from the surface; whereas, if there is only mere serous effusion, we do not see this.

The Secretary.—But how would you distinguish between phlegmon and œdema? They bear some resemblance to each other. By phlegmon I mean that degree of inflammation which, generally, precedes the formation of an abscess, as increased heat, and redness (if perceptible), pain on pressure, and swelling. We have sometimes the very same phenomena accompanying œdema, and yet there is a simple character by which we can at once distinguish a mere œdematous swelling from a phlegmonous one.

Mr. Faulkner.—A mere œdematous swelling takes place, generally in the extremities, from the animal being in a state of debility, and it is also the result of an acute inflammatory attack of the vital organs; whereas phlegmonous inflammation is generally brought on from contusions or blows, or from some mechanical injury.

The Secretary.—There is a very simple distinction, which, in fact, the President has pointed out, that might have answered the question in almost two words; and that is, the absence of any indentation on pressure being applied.

On an œdematous swelling you have indentation remaining, but in a phlegmonous one you have none.

Mr. Faulkner.—I think you have œdema of the extremities sometimes in horses, when you may press without leaving any indentation.

The Secretary.—Then it has become chronic; but I am speaking of acute disease. I repeat, you will have all the usual concomitants of inflammation; but, pressure being applied, there will be left an indentation, which may not be visible to the eye, but will be perceptible to the touch. The swelling in œdema arises from lymph being effused into the cellular or subcutaneous tissue, whilst in phlegmon it is the result of a distention of the capillary vessels; hence, when these are pressed upon, they quickly regain their pristine condition.

Mr. Twinberrow.—We sometimes have the formation of an abscess beyond the reach of the eye or touch, where we can neither discover any fluctuation or enlargement. I would ask Mr. Faulkner, what would be the symptoms which would induce him to believe that there was abscess forming?

Mr. Faulkner.—In this case I think we should have general disturbance of the system, indicated by febrile action. We should have, in fact, an intermittent fever, shivering fits, and then increased vascular action; these, I think, are distinct marks of the formation of pus in the internal organs. But I do not see what external means we could employ. In the first place, we cannot tell where the abscess is.

Mr. Twinberrow.—Is there nothing that would lead you to believe that there was an abscess forming, deeply seated, if you could not see any swelling, or detect any thing by the touch or sight?

Mr. Faulkner.—Only by the means I have before mentioned, conjoined with this, that some one or other of the vital organs would be particularly deranged, and the symptoms would indicate that the disease is seated in them. Fortunately, when situated in deep-seated parts, abscesses have a tendency to point outwards. It is a general law, I believe.

Mr. Cartwright.—I would ask Mr. Faulkner, whether he does not think that the greater number of abscesses may be detected by the common touch? When the formation of pus has taken place, I think there are very few instances in which a person accustomed to feel abscesses may not detect one, even if it is very deeply seated. This, however, is more easily understood than described. There is a degree of tenseness about the parts which indicates that there is matter underneath. Do you not think that the best application for a deeply-seated abscess, which it is not prudent to open, is to put a blister on at once? Mr. Faulkner has advocated the use of rubefacients. But I would use something more powerful than a rubefacient. I would have recourse to a blister. I think, Mr. President, that the author of the Essay has also stated, that, in some cases where abscesses have existed, we shall have those abscesses filled up by adhesive inflammation. Now, I am rather inclined to doubt this: I think that in most abscesses, I might say all of them, they would be filled up by granulations.

Mr. Faulkner.—I said you might do so by approximating the sides that are susceptible of uniting by adhesive inflammation.

Mr. Dunn.—Sometimes, on opening an abscess, we have the matter, as it were, consolidated; i. e. if an abscess has been allowed to remain unopened for a length of time. We had a case at the College—a chestnut horse, a case of fistula which had been thus neglected, and the contents were quite consolidated: in appearance they were similar to bread soaked in water. What is the reason of it becoming in that state?

Mr. Faulkner.—I should think that could not have been pus: I should

suppose the pus had become absorbed, and organized lymph deposited in its place.

Mr. Litt.—I would ask Mr. Cartwright, if he doubts the possibility of the healing of an abscess by adhesive inflammation when the sides are approximated. As he, no doubt, has his reasons for thinking so, perhaps he will explain them.

Mr. Cartwright.—I merely think so, because I never saw a case in point that did do so. It appears to me that the edges of the abscess are in a state that is not congenial to the union taking place. Some digestive is generally introduced to stimulate the part, to bring on a fresh action, and then granulations are thrown out.

Mr. Litt.—I cannot see the reason why, when the surfaces are brought together, they should not unite. I think I have seen many abscesses thus healed.

Some conversation now took place on the pressure of the distended vessels on the nerves, and the pain which this produces when there is much tension of the parts. Mr. Litt was inclined to think that the derangement of the nerves was, in fact, the primary movement of inflammation, and that inflammation was almost entirely referrible to it. He considered this to be, in a great measure, the cause of that increased heat which we have in inflammation. It may certainly, said he, seem a far-fetched theory; but, if nervous influence is owing to electricity, we know that electricity is one of the sources of heat.

The President.—I believe Mr. Litt means that, where we have local inflammation in a part, and, attendant on such local inflammation, extensive swelling, we are less likely to have great pain than where we have local inflammation in a similar part, attended with but slight swelling. In other words, where we have much swelling we have less pain; where we have little swelling, we have often more pain.

Mr. Cartwright.—I am aware that, in many instances, there is excessive pain from a small tumour in a part; but I cannot help thinking that, where the swelling is much larger, and an abscess is not formed, there must be a proportionate increase of pain, as a greater number of nerves must necessarily become pressed upon.

Mr. Litt.—In such a case, you have a greater space affected; but I say, that when a similar space is affected, perhaps the finger, as the President has just stated, we will find that the pain which we have in that finger decreases as the swelling increases. Perhaps we may have suffered acutely from the tooth-ache, but when the gums and cheek have swollen, we have found the pain diminished: that is a very common case.

Mr. Cartwright.—Yes; but I should account for this more from counter-irritation than any thing else. Irritation is, at first, going on in the nerve; then a swelling is set up in the cheek to remove it from an important to a comparatively less important part.

The President.—I perceive that the time for dissolving our meeting is near at hand. We certainly must not consider the Essay as being fully discussed; but, previous to closing this evening's debate, I beg leave to make an observation or two on the discussion which has taken place between Mr. Litt and other gentlemen relative to the pain attendant upon those affections of the

vascular system, either associated with decided swelling, or with little or none. And I would also allude to the remarks relative to the heat of the parts being referrible to the deranged state of the nerves. I believe Mr. Litt does not refer this to any particular division of the nervous system, because we all of us know, from practical experience, that, after the nerve which proceeds down to the foot is divided, the foot is very often excessively hot and inflamed. I could take you into the stable now to a horse the nerves of whose foot I divided a short time since, and the foot is still in a highly inflamed state; no feeling of heat, but there is excessive heat, consequent upon the state of the vessels. I quite agree with him, however, in considering that a derangement of the nervous system is the *primum mobile* of all diseased action in the vascular system, and, therefore, I should say it precedes inflammation: still we know that the nervous system may be labouring under an immense degree of excitement, as in cases of diseased or carious bone, and yet this may be unaccompanied with much, or scarcely any, pain. I therefore cannot think that the heat which we meet with in parts labouring under inflammation is referrible primarily to any affection of the nervous tissue of the part, but to that to which Mr. Faulkner has attributed it, namely, to the distention of the vessels by the fluid which has been poured out into the neighbouring tissues.

I think that his observations with regard to there being frequently less pain attendant upon increased or extensive swelling of parts, seem to disprove the very premises upon which he founds his argument. It is true, that where there is inflammation in organs possessing but a low degree of organization—in organs so compact and firm in their tissues as not to yield to ordinary external pressure—then we have extensive pain, as in inflammation of the periosteal covering of the bones, and of the bone itself, as of the jaw-bone, or of the tendons. It is a notorious fact, that a part which possesses the lowest degree of organization and sensibility becomes highly sensitive when inflamed. We will suppose that there is inflammation taking place in the jaw-bone, or any of the nerves proceeding to the fangs of a tooth, and this is subsequently followed by extensive swelling of the face; but where there is inflammation in a more organized part, and which will readily yield to the tension consequent upon the deposit of pus, there will, of course, be less pain, because the nerves are less forcibly pressed upon. So, while I admit that the statement, as a general rule, is correct, still, I think, that the inferences are wrong in regard to it; and I believe that the pain consequent upon inflammation, when that inflammation is unattended with a deposit either of serum, lymph, or pus, is solely and alone referrible to the

tension of the vessels themselves, from the quantity of blood passing through them. On the other hand, the pain which is attendant on an abscess is referrible to the tension imparted to the surrounding tissues consequent on the formation of pus.

How astonishing is the effect produced on animals, or on ourselves, from having an abscess opened! Puncture it with a lancet, and the matter will spirt out to a considerable distance; and what is the effect!—instantaneous, and, as it were, by a charm, we are relieved of all the pain and uneasiness at once. The pain, then, is referrible to the pressure of this foreign agent.

You saw, a short time since, when I punctured deeply into a horse's haunch, that the pus rose to a great height like a fountain, proving what an immense degree of pressure there had been exercised on the surrounding tissues by its imprisonment.

Sometimes we have a distended state of the vessels, and often of the glands; but that state of distention is relieved by a natural secretion going on from those organs—that is, by the throwing off of blood in the form of perspiration or urine, or any other secretion: but where there is increased action, commonly designated inflammation, of the tissues of different parts of the body, and those parts possessing no positive power of secretion, then it is that the vessels may be called upon to perform some new function in order to relieve themselves. They cannot, however, take upon themselves this new function immediately; consequently they become much distended, and impart a degree of pressure on the surrounding nerves, and thus produce excessive pain.

MAY 19, 1840.

Mr. Daws, V.P., in the Chair.

Mr. Ernes presented to the Library

Traité du Pied, par J. Girard;
Eloge de Huzard, par M. Rainard.

The argument on Mr. Faulkner's Essay was resumed.

The Chairman.—Gentlemen, I am sorry that a more efficient person than myself does not fill the chair this evening; and I am also in some degree sorry that I cannot differ very materially from the observations which Mr. Faulkner has made in his beautiful Essay, for it is this difference in opinion which leads to argument. There are, however, one or two things in which I do dissent from him. The subject of deep-seated abscess was not fully entered into. A few observations were made by one or two gentlemen, and it was asked if there was no symptom by which we can determine the existence of a deep-seated abscess.

We often meet with lameness, and frequently in the extremities; and in

many instances we know the lameness to be caused by a deep-seated abscess forming about the muscles on the haunch or thigh. A short time ago I had such a case under my treatment for a considerable length of time. I was puzzled to ascertain the precise seat of the evil. At length, however, symptoms of the formation of an abscess presented themselves in the gluteal muscles, and on the haunch. In due course of time it was laid open, the lameness subsided, and the horse returned to his work.

Deep-seated abscesses will sometimes form in the muscles of the shoulder, and are very likely to make their appearance at the brisket. After they have suppurated, the lameness generally subsides.

In the part of the Essay which treats of mortification, Mr. Faulkner states that it is more likely to take place in parts not highly organized. I differ from him here *in toto*. I think parts highly organized are most disposed to take on gangrene. If this were not so, I would ask why we so often have sloughing of the hoof from slight puncture of the foot; the foot, I believe, being a part that is highly organized? We are also more likely to have extensive gangrene follow lacerations in the muscular parts of the body where there is much infiltration into the cellular membrane, and more so than from wounds of the tendon or ligaments: at least, my practice has confirmed me in that opinion. There is another point on which I must slightly comment. I think Mr. Faulkner has stated that the restorative powers are greater in the horse than in any other animal. I differ from him in that respect, because I think that Nature has been to all her children ever kind; and the restorative powers in man and in the inferior animals are nearly equal.

Mr. Faulkner.—My reason for saying so was, that, in the healing process in wounds in the horse, it very seldom requires any thing to excite it, and the granulations, instead of being of an inert nature, are often luxuriant. Horses also recover much quicker from inflammatory attacks than do human beings, and the disease is not so likely to assume a chronic form.

Mr. Stavley.—The healing process, I should say, is stronger in the horse than in the cow. Suppose a wound of equal magnitude in each, the horse would get well soonest; and we certainly have suppuration sooner set up in the horse than in the cow.

Mr. Ernes.—This may be the case so far as cattle are concerned, but it does not hold good in the canine race. I have seen instances in dogs of wounds cured in a very short time. The healing power is stronger in them than in the horse; but, on the other hand, I think the restorative powers in the horse are stronger than in the sheep or the ox, which is on account of his high feeding. If the horse were kept and fed as the ox or as the sheep, I do not think the action would be so strong as in ruminants.

Mr. Cartwright.—Mr. Stavley says that granulation takes place much more quickly in the horse than in the cow, and I perfectly agree with him on that point, for it is astonishing to see how rapidly granulations spring up in the horse. They certainly do so in the cow, but there is no comparison between the two.

Mr. Smith.—Mr. Faulkner, in speaking of the medicines he would employ, designates opium as a tonic. I certainly never heard of its being so called before: perhaps our worthy Secretary will give us his opinion.

The Secretary.—The term tonic is a very vague and indefinite one, and has frequently met with objections. Tonics may be divided into direct and indirect. Thus, the medicaments that allay irritation, such as opium and other narcotics, may, in certain states of the system, restore tone or vigour. Those that excite or stimulate may do the same, and thus both become tonics. Even blood-letting, in some stages of disease, becomes a tonic: and purgatives and diuretics likewise become tonics, as it respects their se-

condary influence on the system, and in this manner we might run through the whole of the materia medica, and call all agents tonics. This, however, would lead to much confusion, and, therefore, other designations are employed. This, perhaps, will suffiently explain the meaning of Mr. Faulkner.

Mr. Faulkner, on being questioned as to the administration of tartarized antimony, replied that it produces a general relaxation of the system by its nauseating influence, and thereby, the vessels being relaxed, the action of the capillaries was increased. In answer to a gentleman who inquired what were the uses of pus, he said, that it generally caused an abatement of the inflammation by the secretion which it excited, and also served to protect the part.

The Secretary.—You do not, then, hold with the theory, that there is a separation of the globule into two parts, one becoming organized, the other acting as a shield, so as to prevent any irritant from coming in contact with the newly-formed granulations. The uses of pus are, perhaps, not clearly understood. The theory which was advanced by Sir Everard Home, that pus becomes organized, is not now considered tenable; although there are some who still maintain that a portion of the purulent secretion becomes organized—the albuminous matter that is effused becoming part of the living body. The generality of physiologists, however, do not assent to it. Your theory is, that it simply allays inflammation, and acts as a protection to the newly-formed surfaces.

Mr. Ernes.—Can pus become absorbed? The pus globules are four times as large as those of the blood.

Mr. Faulkner.—I have no doubt that pus is often absorbed, as from the anterior chamber of the eye; and I do not know how to account for the resolution of abscess where there has been pus effused, and that suddenly disappearing, but by its being taken up by the absorbents.

Mr. Ernes.—I do not think pus had been formed in these cases, but blood had been effused. Some very interesting experiments have been made on a dog by Magendie, by which it has been proved that it is not the pus which is absorbed, but the hydro-sulphate of ammonia given off by the pus undergoing decomposition.

The Secretary.—It seems to me that pus can be absorbed by the small capillaries of an inflamed part, for, of late, the pus globule has been detected in the blood. It is now a favourite investigation among members of the medical profession, to detect the presence of the pus globule when an abscess has been known to exist. It is by this assumption alone that we can account for the existence of the globule in the mass of circulating blood. Magendie's experiments, although interesting ones, only go to prove that the pus globule will not pass through the small pores of the capillaries when in a state of health; but let them be in a state of disease, or labouring under inflammation, and then it is possible that the globule may pass; and, being once in circulation, the pus there cannot find its exit, from the very fact proved by Magendie, that the capillaries will not allow it then to penetrate through them.

Mr. Sibbald, although an admirer of Magendie, very much doubted the accuracy of his conclusions here. He begged to ask Mr. Morton, whether he considered that, in the formation of all abscesses, pus is introduced into the circulation?

The Secretary.—No; only under certain circumstances, and most frequently when a deep-seated abscess is being formed. A short time since he was requested by a friend to supply him with some blood from a cow affected with the present epizootic. He took some for that purpose from the external abdominal vein—the mammillary vein—thinking, if the pus globule could be found, it would be there. This animal had also had the peculiar affection of the udder, designated garget; the gland, indeed, presented a mass of abscesses,

and, instead of milk being secreted, it was a mixture of milk and purulent fluid.

To his very great surprise, the pus globule could not be detected in the blood by his friend, who was a very careful microscopic observer. This circumstance has been quoted in the *Lancet* of last week. So that it does not follow, of necessity, that we should have the pus globule in the blood whenever abscesses exist in the body.

Mr. Ernes.—We have proof of pus being absorbed in too many instances. The question, however, is, whether it was absorbed without undergoing decomposition.

The Secretary.—I should have been inclined to favour Mr. Ernes' views, that it is hydro-sulphate of ammonia that produces all this mischief in the system, were it not for the startling fact, that the pus-globule has been detected in the blood. I believe that the hydro-sulphate of ammonia may cause all this mischief when introduced into the circulation, and we know that this compound is given out very largely during the decomposition of purulent matter. Now, however, that the existence of the pus globule has been demonstrated, I think the question is set at rest: the globule is absorbed from the pus without undergoing any decomposition.

Mr. Cartwright would ask Mr. Faulkner, whether he would not think it advisable, where granulations have sprung up to some extent, to apply the cautery instead of using a caustic. He thought it far preferable; for instance, when a horse has fallen and broken his knee, and is left unnoticed for three or four days, and great masses of granulations have sprung up about the part, would it not be more prudent to apply the cautery?

Mr. Faulkner had many times applied it instead of a caustic.

A long and somewhat wearisome discussion now took place as to the nature and cause of congestion, and the line of demarcation between congestion and inflammation. The nature of mortification, whether as the consequence of inflammation or congestion, also occupied considerable time. Messrs. Cartwright, Daws, Dunn, Ernes, Faulkner, Litt, Sibbald, Smith, Stavley, and Twinberrow, took a leading part. We regret, however, that the limits of our Journal prevent us from giving a detailed account of the debate.

The certificate of Fellowship was awarded to Mr. Faulkner for his Essay.

MAY 26, 1840.

The President in the Chair.

The following letter from Mr. Robinson, of Tamworth, was read.

Dear Sir,—That frightful and destructive disease in cattle, Puerperal Fever, having been very prevalent in this neighbourhood during the last month, and several cases having fallen under my care, and been treated with variable success, by bleeding, blistering, and purgatives, I have thought that one of an intense and malignant kind, which presented itself a few days back in a cow at Drayton Manor, may not prove uninteresting, nor its description unprofitable. She was the property of the Right Hon. Sir R. Peel, Bart. She calved

on Wednesday last, and was turned into the Park on Thursday at noon, apparently quite well. At six P. M. she was found down, with all the symptoms which denote this fever. A more dejected countenance, and greater violence in throwing the head back on each side, I never before witnessed. I think you may always measure or calculate upon the extent of danger from the movement of the head.

The pulse was hard and frequent. I was in immediate attendance. I employed early and copious bleeding, powerful purgatives, aided by clystering at short intervals, and the application of extensive blisters to the back of the head and spine, particularly on the lumbar region. She died early on Saturday morning.

Post-mortem examination.—The intestines and fourth stomach empty; the rumen or paunch half full of soft and imperfectly masticated food; the second stomach nearly empty; the third or maniplus full and round—its contents very hard and dry, and on removal of the ingesta from the maniplus, a thin glossy coating appeared on its surface, probably produced by the absorption of the fluid part of this once mucous covering, aided by the absence of all secretion in this stomach. The uterus, intestines, and other contents of the abdomen were quite healthy; the contents of the chest were also healthy; the membranes of the brain were in a state of congestion, and inflamed; the spinal cord and its membranes were inflamed at the lumbar region; while the crural nerves, and the membranes lining the lumbar vertebræ and sacrum, appeared also inflamed.

I have ventured to trouble you with this communication, accompanying it with the brain, the lumbar region of the spinal cord, and portions of the nerves from the pelvis as abovementioned and also a part of the uterus; hoping that you will do me the favour to offer them to the President and Members of the Veterinary Medical Association for their inspection, repeating my wish, that the case may prove of sufficient interest to engage their attention, and the morbid parts accompanying it enable them to arrive at a correct conclusion as to the cause of the rapid dissolution in this and similar cases of puerperal fever in cattle.

May I go farther, and ask, what part is primarily affected in this disease—the brain, nerves, or viscera? I am inclined to believe the former; and every case, successful and unsuccessful, which has fallen under my notice during the last twelve months, appears to confirm and strengthen my previous opinion.

We have had a busy time these last three weeks with the epidemic in cattle. It seems to be an inflammatory attack of the whole of the mucous membranes of the mouth, tongue, and throat. Blistering the throat and parotid and submaxillary glands, has been the most direct way of combating the disease, and, in every instance, this has been successful in staying the violence of the symptoms in six or eight hours. Moderate purgatives, with strong diuretic medicine, will then speedily effect their restoration to health.

The President, after a brief enumeration of the specimens sent by Mr. Robinson, remarked that, on examining the brain, it appears that there is considerable inflammation in the tissue which immediately invests its parenchyma, namely, the pia mater. The dura mater and the arachnoid membrane do not appear to have been in the least affected. On an examination of the organ in a fresher state than it now is, he considered the cortical substance to be much darker than it is usually met with. On laying it open, the plexus choroides were seen presenting a much higher tint than natural, and in contact with the velum interpositum or that peculiar plexus spread over the thalami or corpora gemini. All these parts exhibited inflammatory action; and the plexus choroides of the fourth ventricle was also considerably inflamed.

In that part of the spinal marrow taken from the lumbar region, the same appearances are observable. The outer sheath of the spinal cord, that which is similar to the dura mater of the brain, does not appear to be in the least affected. The arachnoid tunic was removed by me two days ago, and it was perfectly transparent, evincing no marks of inflammatory action; but the pia-mater investiture of the spinal marrow—similar to that which covers the brain itself—is evidently in a state not merely of congestion, but of inflammatory action. It seemed clear to him that the vessels ramifying there were considerably inflamed previous to death.

On looking at the portions of the sympathetic nerve, he observed that the cellular substance surrounding them presents the appearance of ecchymosis. Whether that had arisen from any injury inflicted on the parts during the time the animal was lying down, or from the extreme vascular action consequent on the inflammation of these parts and the laceration of the vessels, he could not say. But on cutting into the nerve itself, it presented any thing but a normal appearance. The various filaments of which it is composed, he said, are not all distinct in their arrangement, and it exhibits a darker hue than usual. This is also the case with regard to the sciatic nerve. It is quite evident from the parts forwarded to us, that there was an abnormal state of the brain itself, of the spinal marrow, and of the nerves which proceed from the lower division of the latter.

The inner surface of the uterus appears to me (he said) to present a perfectly normal state; it is precisely the same as we are usually in the habit of seeing a short period after parturition. It has upon it the various cotyledons which form a connexion between the fœtal and maternal portions of the placenta. These projections are somewhat vascular, but that is the state in which we are in the habit of seeing them when they have been recently separated from their connexions. I have no doubt that, had this animal not been the subject of an affection of the sensorial system, these cotyledons of the chorion would have become gradually obliterated, and the surface of the viscus would have presented its ordinary mucous lining.

Under these considerations, the abnormal appearance of the parts before us seems to bear Mr. Robinson out in the view he has taken of the malady, in referring it primarily rather to an affection of the brain and nervous system than of the digestive organs or the uterus. I believe there are some instances on record, where the uterus has been found in an inflamed condition, and in almost every case the third division of the stomach has been filled to repletion—the food has been impacted in it, and it necessarily has not been performing its functions. But, as Mr. Robinson asks, is that the cause of the derangement of the sensorial system, or is it an effect of it? I believe it to be the latter. We shall, however, have an opportunity of hearing the practical observations of some gentlemen present who have met with similar cases, and in some instances treated them with success.

I believe that our Patron has had an opportunity of examining these morbid parts previously to the present time; I know that he has some views with regard to the nature of this disease, and, perhaps, he will have the kindness to favour us with them.

Professor Sewell.—You draw too largely upon me; there are persons present more accustomed to cattle practice than I am. A few instances only of puerperal fever have occurred under my notice.

I think there has not been sufficient attention paid to the state of the animal while labouring under prostration of strength and unable to rise, particularly as to whether or not there has been entire loss of sensation as well as motion. If that point were attended to we should be better able to ascertain whether it is a disease of the nervous system or not. An animal

which I saw the other day evinced pain—it had lost muscular power, but not sensation. I have only seen one severe case, where the whole internal lining of the uterus was in a high state of inflammation. I consider that this was a case of pure puerperal fever.

I think that the members of the profession are not settled in their opinion respecting the meaning of the word; they do not define what part is affected. If it is puerperal fever they should call it by that name; if it is an affection of the brain and spinal marrow, it should be designated by a name indicating disease of those parts. Until this is the case we shall not pursue a rational mode of treatment.

If it be puerperal fever we shall expect to find the whole of the peritoneal lining of the abdomen inflamed. I have seen a case or two of each kind, but not sufficient to warrant me in coming to a conclusion as to which is the most general seat of the disease in the cases that prove fatal. I should like to hear the opinions of those whose business it is to attend to this disease, and who see so much more of it than is witnessed by ordinary veterinary practitioners. I would state, without mentioning names, that, on inquiry among the profession, I find they differ materially in their opinions. By one, it is referred entirely to the uterus; by another, to the brain and nervous system; by another, to the third stomach; and one gentleman has informed me that he considers it frequently to arise from over-distention of the bladder and an inability to pass the urine, because, after introducing a catheter, the cows have stood up and done well. The profession, therefore, has not defined the actual disease which occurs in, or is the cause of dropping after calving. There is no name given to it as affecting any particular structure.

Mr. Stavley.—From the numerous post-mortem examinations I have made, I consider it a disease of the brain and nervous system; but I have found the envelopes of the spinal cord and brain to be very particularly affected. With regard to the third stomach, I can scarcely consider its condition as an effect of this disease. I should say from its appearance that it has been defectively performing its functions prior to the occurrence of this affection.

The President.—In those cases where you have examined cows that have died of this affection, have you found what you consider the immediate cause of death to be a diseased state of the brain and nervous system?

Mr. Stavley.—I have; more particularly the lower portion of the spine: but it has been principally confined to the envelopes. I have very rarely found inflammation of the uterus or peritoneum. It is much more common to find the uterus healthy.

I have seen many instances of cows falling after calving, which have not proved fatal, and where there has been an absence of those marked symptoms which generally accompany a fatal termination. This usually occurs after the animal has travelled a considerable distance, or when it has calved on the road within twelve or fourteen miles of Smithfield, or the market at which it was intended to be sold. In these cases there is very little inflammation of the uterus. Probably this is rather an affection of debility than of inflammatory action; for there is very little constitutional disturbance, and, by stimulants and rest, the animal is soon restored. I have sometimes found that in the hinder parts there is a loss both of motion and sensibility; in other cases motion is impaired, but sensibility remains.

I have also frequently observed that the animal is perfectly unconscious of surrounding objects; the eyes are very much affected—there is something like gutta serena present.

The President.—Because a cow "drops" after calving, you do not think that she is necessarily affected with this peculiar disease?

Mr. Stavley.—I should say not. I consider that there are two distinct af-

fections; in one I have recourse to an antiphlogistic mode of treament, in the other to the use of stimulants.

I find plethoric cows to be most frequently the subjects of attack. I have lost about ten cases where the animals were perfectly healthy and well about seven o'clock in the morning, they have calved at ten, been attacked almost immediately by dropping after calving, and, in four hours after that, they were dead. If I attempted to give them even cold water they could not swallow it. The act of parturition was performed with facility and ease in nearly the whole of them.

The President.—Your experience, then, leads you to suppose that difficult parturition has nothing to do, as an operating cause, in the production of this affection.

Mr. Stavley.—I do not know that I ever saw it follow difficult parturition.

Professor Sewell.—I beg to state that one individual considers that there is a state of collapse, and that the best conditioned cows are the most subject to this disease. The muscles of the abdomen have been in a state of distention so long that these organs lose their power of acting; respiration is carried on with difficulty, the lungs become congested, and, before death, are inflamed. The difficulty of swallowing which occurs favours that opinion. This is the view taken by a gentleman in extensive practice in the country.

I would ask Mr. Stavley whether the cows have shewn symptoms of delirium?

Mr. Stavley.—They shew coma, but not delirium—in fact, they are unconscious of what is going on. There are, as I have said, two distinct diseases, so far as my observation goes; the one I do not consider dangerous, the other highly so.

Mr. Simonds.—I think we are considerably indebted to Mr. Robinson for having had the kindness to forward to the Association the morbid parts before us. I entirely concur in the view which he takes of the nature of the affection. There are decidedly two distinct diseases which attack cattle after calving. In both the animal is down and incapable of rising: but in one case the disease is confined simply to paralysis of the hind extremities; in the other, the animal speedily passes into a state of coma, and the whole system of voluntary nerves participates in the affection. In fact, one is a cerebral affection, the other a simple paralysis of the hind extremities. These cannot, in my opinion, be cases of collapse, arising from the causes explained by a country practitioner to whom Professor Sewell has alluded; for we find that they do not occur immediately after calving. One, two, or three days may pass over—the animal may appear well and be ruminating—giving a full allowance of milk to the calf, and not exhibiting the least indication of disease.

The first symptom is a staggering gait; and this is no sooner recognized than others follow in the train, creating alarm. If the practitioner is on the spot, and can observe them, he will perceive the symptoms develop themselves one after another very rapidly. The respiration becomes interrupted, and the eyes exhibit that appearance which Mr. Stavley describes as similar to gutta serena in the horse. The pupils become immensely enlarged, from the contraction of the iris. In this state the animal staggers to and fro for a short time, perhaps a minute or two, and then falls. No sooner is she down, than the head, which the muscles vainly attempt to support, is thrown on the side, and the animal immediately becomes in a perfect state of coma. Whatever is given will run down the trachea, and there will be no effort made to throw it up by the irritation which would otherwise be caused in the passage of the fluid over the rima glottidis. The nerves give no warning of the descent of the fluid into the larynx and down the trachea.

The other affection is simple paralysis: there is no coma. The animal is

down; she eats, but is incapable of rising. She is perfectly sensible, recognizes her calf, and lies in some cases for a week, in others not more than three days. Sometimes the intestines participate in the general derangement, and there is costiveness; the bladder, also, is incapable of getting rid of its contents. Why is this? Because the bladder, in all probability, is supplied by nerves which are given off posteriorly to the part affected by paralysis. The constipation arises from a similar cause. It would appear that, in these cases, the laws of vitality are interfered with, and those of chemistry brought into action, for the food runs into fermentation.

We are not to be surprised if we find, on a post-mortem examination, inflammation of the uterus, occurring, as the disease does, so soon after calving. This does not prove that the affection is essentially inflammation of the uterus; for in the case before us none exists. I have found in other cases slight patches of peritoneal inflammation; and there is invariably a hardened state of the contents of the third stomach. The latter is entirely referrible to the derangement of the nervous system, and the state of the stomach—the food obeying the laws of chemistry.

In some cases which I have had an opportunity of examining after death, I have found inflammation of the substance of the spinal marrow, but, more frequently, inflammation of the meninges, and, not unfrequently, an effusion of blood between the meninges and the spinal marrow itself, which arises, in my opinion, from the high degree of inflammatory action that has been going on, and by which a minute vessel has become ruptured, and the blood poured out. If the extravasation arose from previous injury, we should expect a different train of symptoms from those which I have enumerated. They would not occur so suddenly, and we should be able, in the majority of cases, to trace the external injury. We might expect to find laceration of the muscles, or a considerable swelling.

I was induced formerly to have recourse to blood-letting; but, taking the view of the disease which I now do, it is seldom that I use the lancet, for I do not consider the disease to be essentially one of inflammation.

I forwarded some time since, for your examination, the spinal column of a cow, in a most decided case of dropping after calving, in which there was no appearance of inflammatory action in any part of the column. This was proof direct that the affection was not essentially of an inflammatory character, although occasionally inflammation may be present. In cases of coma, therefore, of the extreme description mentioned, I do not have recourse to depletive measures, but I exhibit stimulants in order to rouse the vital powers, and, if possible, bring back the animal to a state of consciousness.

I think that a great number of cases have been lost from the sequelæ of the affection, and that many animals have died from medicine being given too early or without due caution. For instance, from the state of insensibility in the larynx, the probability is that a portion of the medicinal agent passes down it, so that there is the presence of a foreign body in the viscera of the chest, and all the consequences result which would flow from the introduction of any other foreign agent. I have myself lost three or four cases where it was entirely referrible to this cause.

In one of them I ordered, in combination with other agents, a portion of sulphur. A man in charge of the cow was directed to give it during my absence. On my return I found her much worse, and very shortly afterwards she died.

On making a post-mortem examination I discovered sulphur in the windpipe, so that there was positive proof of the medicine having descended it. On inquiry, the man told me that she did not cough.

In another instance I made a post-mortem examination of a cow belonging

to his Grace the Duke of Northumberland. It was decidedly a case of what is called puerperal fever. The bronchi and the air-cells of the lungs were completely crammed with ingesta, which had, in fact, caused suffocation. I am therefore inclined to believe that, in a considerable number of cases, the animals do not die from any inflammatory action in the brain or spinal marrow, but from suffocation produced in the way I have described. But there are other cases in which I have no doubt the patients die from coma. I repeat, that we are much indebted to Mr. Robinson for having forwarded to the Association the parts before us. It can only be by means of practitioners in the country forwarding morbid specimens to the Institution, that we can hope to make any improvement in our present knowledge of the diseases of cattle. Some few efforts are now making, and I trust that they will be successful, in removing the stigma which attaches to this portion of the profession.

Mr. Creswell.—I have seen several of these cases. There has generally been a suspension of milk: where that does not occur, the cases seem to go on well without any trouble.

Mr. Stavley.—Sometimes I find that there is no motion of the hind extremities, but sensation is perfect; and sometimes there is no motion in the fore extremities, but the disease makes its appearance there as soon as it does in the hind extremities. With respect to the observation which fell from Mr. Simonds regarding medicine going down the trachea, it is my opinion that we ought never to exhibit medicine to a horse or a cow without a syringe. I was attending a case the other day which I was obliged to transfer to better hands. On making a post-mortem examination, though there was no appearance of disease of the lungs while the animal was alive, yet I found, on opening the trachea and the bronchial tubes, pus contiguous to the air-cells, and I traced the medicine down the trachea. I know that that cow had been carefully attended to during the disease. She had taken a large quantity of gruel, and a great portion of that had passed down the trachea.

I have seen the same effects produced in the horse as in the cow. I have seen fatal consequences brought on when the medicine has consisted of nothing but a little oil.

Mr. Cartwright.—I cannot agree with the observation of Mr. Stavley, that it is not a good practice to give drenches to a cow, except by means of a syringe. I have seen it done in hundreds of instances, but I never saw a case in which any portion of it went down the windpipe; such cases, however, may occur. I have seen such a case now and then in the horse, and I have often thought that it is dangerous to give them drenches.

The President.—Mr Cartwright says that it is *possible* for a portion of a drench to pass down the trachea of a cow, although he has never seen it. Mr. Stavley merely suggests the propriety of another mode of exhibiting it by which he considers it may be done with equal facility and with greater safety. If only one cow in five hundred should be destroyed by the fluid passing into the trachea, it would be advisable to adopt measures to obviate it.

Mr. Cartwright.—I think you would wear out as many syringes as would pay for the occasional loss of a cow. I have never seen it occur in a thousand cases at least; and while drenches can be given without this danger, I do not see the necessity of using a syringe.

Mr. Stavley.—I was once of the same opinion as Mr. Cartwright. I have for weeks together given many drenches daily without any injurious consequences; but I have seen four or five fatal cases.

The President.—Cordially do I join with those who have said that the members of the Association are much indebted to Mr. Robinson for the interesting specimen which he has forwarded to us. The observations which

have fallen from many of our practical members relative to this malady, have, I trust, tended to throw some little light upon the subject. So far as I am personally concerned, I have obtained more knowledge of it than I possessed when I entered the theatre.

My experience of the nature of this disease is extremely limited. I have only seen some few cases of it, and those have been through the kindness of practical friends who have directed my notice to them. From the diseased appearance of parts taken from cows that died of this disease which I have examined, from observations I have before heard, and from those which have been been addressed to us to-night, I must confess that at present I am impressed with this idea of its nature,—that the digestive apparatus, whether preceding or subsequent to the act of parturition, is principally affected, and therefore I differ from the view taken by Mr. Simonds.

Mr. Stavley.—Before the discussion closes, I beg leave to ask one question of those I see around me. Did not this disease assume a more fatal character within a given time last season than before?

Mr. Simonds.—I think it did. At any rate I had more cases last year than I ever remember to have had before, and the majority of them were fatal. I considered myself very fortunate when I saved one. I also think that the disease ran its course more rapidly than before. I have seldom had the animals live more than forty-eight hours.

Mr. Ernes begged leave to introduce Dr. Gilmeister, veterinary surgeon to Prince Thurn and Taxis, at Regensburgh, in Bavaria. He had seen much of the epizootic of the mouth and feet which had prevailed in Mecklenburg in 1838 and 1839. Since he came to England, he had drawn up a short history of its rise, progress, and treatment, with the express purpose of presenting it to the Association. With the leave of the President, he would endeavour to translate it to the Association. It would not occupy much time, and the history of the epizootic in foreign countries could not fail of being interesting and useful.

The President replied, that the meeting would be most thankful if Mr. Ernes would make them acquainted with a communication that must contain so much interest.

ESSAY ON THE EPIZOOTIC OF THE MOUTH AND FEET

Which prevailed in Mecklenburg *in the Years* 1838 *and* 1839.

By Dr. Gilmeister,

Veterinary Surgeon to Prince Thurn and Taxis at Regensburgh in Bavaria.

A conversation which I had a little while ago with one of the members of your most useful Association, Mr. Ernes, on the prevalence of an epizootic among cattle in England, led to the composition of this paper; but it was only on the repeated solicitation of this gentleman, and the assurance he gave me that any account, however imperfect, would meet with a favourable reception, that I was induced to appear before you in this unprepared manner, not having access to any of my written records, and, consequently, obliged to pass over many an interesting detail, and treat others very imperfectly. I trust, therefore, that it will not be thought that I lay the slightest claim to any literary merit, but, on the contrary, I feel my inability of doing justice to the subject, and throw myself entirely on the indulgence of the meeting.

In 1834 the disease prevailed in Hungaria and Lower Austria, and spread rapidly to Bohemia, Saxony, and a great part of Prussia. In a few years after this it made its appearance in Mecklenburg. It entered the country at two points, viz. on the south and on the west, and it followed a direction to the north and the east; and thus in a few months had not only invaded the whole country, but had spread to western Germany, Holland, and France.

I had at that time an extensive practice in Mecklenburg, and was thereby enabled to observe and study it in its different stages.

The invasion and spreading of these epizootics depend, I am inclined to think, on two causes,—namely, miasma and contagion. In support of which I would adduce, first, the apparently spontaneous and contemporaneous appearance of the disease in different and far distant localities, between which there had not been any communication; and, secondly, the uncommon rapidity with which it spread either in the same herd or in the different herds that were dispersed over a large tract of country. No sooner had the disease shewn itself in a herd of perhaps a hundred beasts, than in thirty-six or forty-eight hours the whole were infected, or, perchance, two or three might escape.

As to the contagious nature of the disease, there will be very little doubt, if we consider how readily it may be communicated by actual contact; as, for example, by taking a wisp of hay and wiping off with it the drivelling saliva of a suffering animal, and bringing it in contact with the muzzle of, or suffering it to be eaten by, a healthy beast. This was always speedily followed by a disease bearing the greatest analogy in its symptoms and course with the one under which the first animal was labouring. The process of inoculating was frequently resorted to by the farmers, in order to have a more general outbreak of the infection, when once it had made its appearance amongst their cattle, and to produce it under a milder form, or, if possible, to get rid of it sooner. The second mode of inoculating the disease was by transferring it on the point of a lancet or other sharp instrument, and thus it was communicated, not only to individuals of the same species, but also to animals of various classes, and even to the human being. Thus communicated to cats and dogs, it would often terminate fatally. I will not now enter into the consideration of those cases of apparent contagion—there can be no doubt about them: but in many instances may not the miasma have preceded, and the infection be in appearance only?

There have also been instances where one herd has escaped the infection, though surrounded on all sides; but, when this happened, it was generally in farms that were situated on the driest and most elevated parts of the country, and where the owners had taken the necessary measures against contagion. At other times no local difference, or provender, or constitution, or age, or sex, seemed in the least to modify the disease. The constitution of the atmosphere, viz., a warm spring and summer, seemed to have a peculiar influence on it.

It is difficult to seize the first symptoms of the epidemic. They are said oftenest to be those of mild catarrhal fever—rheumatic fever—an affection of the mouth—swelling or sores in the feet, or a complication of these symptoms—or pure asthenic or inflammatory fever. I have never observed the acute inflammatory fever, nor had it been seen by any other member of the profession that I stood in correspondence with at the time. The fever which I have seen was decidedly of the asthenic character, and at the same time of the typhoïd form. Complication of inflammation of the stomach is of rare occurrence.

I will now endeavour to describe the symptoms of the affection of the mouth in the ox. I mentioned a difficulty in the perception of the early symptoms. This consists in the casual fever, which, in general, is so slight, and

passes off so quickly, that we are not aware that the animal was ill until the local affection makes its appearance, and the disease is almost come to its crisis. In the majority of cases the veterinary surgeon is not sent for until the fever has run its course, and no opportunity is afforded him to see its invasion. In the course of my practice, and when the disease had made some progress, and my attention was called for at some farm or another, it has often happened that some beast, apparently in good health, has begun to drivel from the mouth, and on examination it was found that blisters had made their appearance. The fever in these cases had passed off unnoticed. This led me to watch the others more closely, and enabled me to detect the fever in many individuals where the general health hardly seemed to be disturbed up to the time that the exanthema made its appearance. Mastication and swallowing then becomes difficult and painful. The pulse seldom rises above 70 in the minute, and is weak and soft; the pulsation of the heart is scarcely perceptible; the mucous membranes are slightly reddened; the secretions and excretions are lessened; sometimes costiveness prevails; the mouth is less moist but not dry, and it is also hot. There is a general debility of the muscular system. In from two to five days the vesicles make their appearance on the reddened tongue and gums; they generally are of the size of a pea or small bean; they are filled with clear fluid—lymph. At this stage of the disease there is either loss of appetite or the animal is unable to feed.

In some cases, if not generally, there is great difficulty to swallow, for I have often seen the animal turning the food, after mastication, from side to side in its mouth, trying in vain to get it down, and at last letting it drop. This may depend on the swelling of the tongue, together with the local pain. I need not say that this stage of the disease is considered as the commencement, instead of the crisis, by the non-professional practitioner or empiric.

The vesicles seldom break of their own accord, but this is done by mechanical pressure in the endeavours of the animal either to masticate or swallow his food. The dead epidermis peels off, leaving the parts covered by red spots, and shewing the intense inflammation that had been going on. In a few days, from three to six, cicatrization takes place, the appetite returns, and the disease is removed, without, in those mild cases, sending for professional assistance. Sometimes there is inflammation of the parenchyma of the tongue—glossitis. In these cases the swelling is so great, that the tongue becomes too large for the poor sufferer's mouth to contain it. Scarification is here the best means of affording relief. Instead of the inside of the mouth, the local affection is sometimes on the outside of it; but the hardness of the skin prevents the form of the vesicles from being strongly marked. Scurf is left behind, and the process of cicatrization is much slower.

Differences.—In sheep the vesicles generally appear on the upper or toothless maxilla. These animals do not suffer so much as the ox, when the disease is confined to the mouth only. In swine, the seat of the local affection is the proboscis, and the vesicles are of a bluish colour. These animals suffer more than the former. The invasion is also more marked, and is distinguished by dulness, an anxious countenance, difficulty of breathing, refusal of all food, and vomiting. I have not observed the disease in the horse.

The disease of the foot makes its appearance in a similar way to that of the mouth. The slight difference of fever is hardly appreciated, and of very little consequence. The seat of the local affection is the fibrous tissue of the last phalange of the foot. The animal seems to find much difficulty in its walk; hence, perhaps, the idea that the fever was rheumatic in its character. I should add, that it is still more difficult to distinguish the general symptoms than in the affection of the mouth. The difficulty in locomotion, the pain which the animal experiences in putting his feet to the ground,

and the sudden snatching of them up when on the ground, announce the presence of the local affection.

I generally found the interdigital space to be the first seat of the blisters. The skin appeared a little red when the coat of the animal was not of a dark colour—there was increased heat, and great swelling, followed by the appearance of vesicles. Frequently the disease extended to the heels and coronets. If more than one foot was affected, there was very little chance of having ocular demonstration of the presence of vesicles, for the pressure of the feet on the ground generally destroyed them before there was time for any satisfactory examination.

In sheep the disease assumes the same form as in cattle, only it is not so acute, and the vesicles are more visible in consequence of the mechanical pressure being less.

I have not had any cases of the disease in the feet of swine.

From what has been stated it is evident that the epizootic of the mouth and that of the foot are the same disease. Both begin with a slight fever, the crisis of which is the vesicles, and it seems to be mere chance whether their seat is the mouth or the feet, or perhaps depending on some peculiar diathesis or predisposition—as the constitution of the animal—the manner in which it is fed—whether stabled or at grass—the locality—and, lastly, the constitution of the atmosphere. All these have undoubtedly a greater or less influence on it.

The value to be set on the animal, or the distinction of the fever into rheumatic or catarrhal, the members of the profession will know how to appreciate. It is possible that the fever, in the first appearance of the disease, is one *sui generis*, similar to that in small-pox, and it cannot be denied that there is a great resemblance between the two. To prove the identity between the epizootic of the mouth and that of the foot, I will add, that I have not found them attack the animal at the same time, but they generally follow each other at short intervals, so that few herds remained free from the one when the other had preceded.

It now remains to consider a few deviations from what has been considered the mild or benign form. The epizootic, when the local seat has been in the feet, may progress and change into a disease, *sui generis*. This does not occur when the local seat has been the mouth. But it is necessary to draw a distinction between this and a similar disease in sheep (foot rot), which is a chronic, feverless, local, and highly contagious affection, and has only been known in Germany since the introduction of the Merinos from Spain. This distinction is acknowledged, up to the present period, in all the treatises of the diseases of domestic animals. Wirth, physician and professor at the Veterinary School at Zurich, asserts that the chronic disease in sheep originates in the mild or epizootic form; but, according to my experience, I cannot agree with the learned Professor. I have always found a great difference between the malignant which had originated in the mild, and the chronic which is also denominated the Spanish. The first is characterized as in the ox, and is preceded by inflammation, with a disposition to terminate in sphacelus; while, in the latter, there is only a slight inflammation and ulceration, with a power of communicating itself by contact. It is also epizootic, which is not the case with the former—the epizootic character having disappeared at the time of its becoming chronic and local.

The malignant form of the disease in the feet of the ox and sheep shewed itself in the month of June 1839, and lasted until August in the same year. The mercury stood high in the thermometer, and many of the herds were still suffering from the disease of the mouth, while others had but just recovered. Many died of inflammation of the viscera. The farmers thought that their cattle had recovered from the epizootic, when suddenly some fell

lame and remained behind, and, in cases where more than one foot was affected, were unable to walk from the increased pain. There was also loss of appetite; the foot was swelled from the pastern downwards; the toes were spread out; the connexion with the inner wall of the foot seemed lifted up, and there oozed from it a thick whitish pus of a very offensive smell. The probe touched on every side a hard substance, and, on making an incision, it was very easy to remove a substance or corn of the size of a hazel-nut, or sometimes as big as an egg. This substance was of a porous structure on the outside, and of a fibrous one within. It appeared to be an altered state of the vascular coat of the parts as well as the surrounding cellular tissue. I have not been able to trace any connexion between it and the fibrous structure of the foot. The renovating powers of this substance were very great. It often happened that, on one of the largest size being removed, it would be replaced in two days, or even less, by another almost as large. Is this cancer of the foot? I often found the capsular ligament of the one or other articulation attacked, and the opening plugged up by coagulated synovia. In the worst cases the bones of the foot were not unfrequently attacked, the tendons and ligaments destroyed, and the foot in the highest state of sphacelus, and speedily terminating in death.

The first indication, when attended to in time, is to remove all the diseased parts to the quick, and, perhaps, the application of the actual cautery may be of service, the parts being afterwards well dressed with digestives. This would soon restore the animal to health.

In many cases that appeared mild at first, and were too often neglected, the animal would be observed dragging the loathsome and swelled leg after him; while at the coronets might be seen openings which led to deep-seated abscesses out of which the matter was flowing at every painful step the animal was forced to take. On probing the part, nothing but the bones of the foot arrested the probe, the capsular ligament of one or both articulations being completely destroyed; and, not unfrequently, exfoliation of the bone had taken place. In those cases I formerly used the knife, the red-hot iron, and the argentum nitratum, but I afterwards succeeded in making a cure without these severe means. I cut less, except to make counter-openings, through which I passed setons of twisted wool previously steeped in a mixture of the tincture of aloes and asafœtida, the parts being kept clean, and daily dressed with the same mixture. I have often, with success, passed setons from the coronet to the sole, and even through the articulation of the foot, in cases of open joints, and effected a cure in less than three weeks. In this mode of treatment there is less loss of substance, and, consequently, the case is sooner completed, and all the damage to the animal is, perhaps, one toe shorter, or an anchylozed articulation, and which is in general very little detrimental.

I have thus successfully treated about forty cases, from June to August. Two cases in which I could not arrest the sphacelus proved fatal. The average loss from the attack of this disease was about sixteen per cent.

The deaths from inflammation of the viscera, above alluded to, and after the epizootic had subsided, was from ten to eighteen per cent. Five herds came under my notice.

The death in many cases was so sudden, that the veterinary surgeon must often be too late, the animal having died before I could arrive, although I only attended to cases in my immediate neighbourhood. Of sixteen cases I had at once, only two recovered.

I considered this to be in many cases a typhoid inflammation of the heart, and I only regret that from want of time I am unable to give a description of this new form of disease; but my intention is to send an account of it to Gurlt and Hertwig, for the Magazine of Die Gezamte Heilkunde.

It only remains for me to apologize for having taken up so much of the valuable time of the Association.

Mr. Ernes now kindly offered to act as interpreter to Dr. Gilmeister, should the members desire an explanation of any portion of his communication.

Mr. Simonds.—Has Dr. Gilmeister produced the disease himself by inoculation?

Mr. Ernes.—No, but he has seen it produced by farmers in the way he has explained in his paper. Dr. Prince, of Berlin, has produced it by inoculation. The disease appeared in three days. The saliva was carried about three English miles.

The President.—Had the disease made its appearance at the place where the experiment was made prior to its performance?

Mr. Ernes.—Dr. Gilmeister thinks that the animals operated upon had not come in contact with any that were diseased; the malady had not previously shewn itself there.

Professor Sewell.—Do the milkers become affected from the ulcers on the nipples?

Mr. Ernes.—He has not heard of any case in which it has been communicated in this way.

Professor Sewell.—Anticipating that this subject would be brought forward, I have made some inquiries, and I cannot ascertain that any instance has occurred of infection being communicated to the hands of milkers. I wrote to two friends who have the charge of large establishments for children, to inquire whether they had met with it as the result of using butter or milk, and they reply in the negative. Mr. Lloyd, the surgeon to Christ's Hospital, has not seen it, nor have they had any patients in St. Bartholomew's Hospital in which the disease could be referred to milk diet. I have inquired of many practitioners attending families and schools where milk constitutes a great part of the diet, but they have seen no evil arising from it. So far it is satisfactory as removing any alarm from the use of milk. It appears, however, that in Germany it has produced fatal results, from which it would seem that the disease is somewhat different from that which has prevailed in this country.

Mr. Ernes.—Professor Hertwig told me that he had produced the disease in his own person by taking warm milk three times a-day. Three days afterwards, vesicles appeared between his fingers, similar to those which occur in the mouths of animals.

The President.—I have heard several surgeons state that they have met with peculiar diseases in children since this epizootic affection has been raging in London, and which they consider analogous to this complaint. Whether it may be considered as resulting from the same state of the atmosphere as that which produces this disease in cows, or whether it has been caused by children partaking of milk, is the question to be determined. A nephew of Mr. Sewell's mentioned several cases to me, and so have other gentlemen. I consider that, if a single instance can be shewn where this disease has been transmitted from the lower animals to the human subject by the milk, it is quite sufficient to prove the identity of the disease with that which has prevailed on the continent, where it may have been more fatal; whereas a thousand instances in which children have escaped are insufficient to prove its non-identity. The discrepancy, it seems to me, may be explained in this way. It is a well known fact that many poisons may be taken into the stomach without producing any effect on the system. Glandered matter will pass into the stomach of the horse without inducing the disease. The power of the gastric juice is such as to render some poisons inert. But it

becomes a question, whether these poisons may not produce such an impression on the mucous surface, over which they pass, as to become absorbed into the system, and thereby produce the affection. Now in the cases related by the author of the present Essay, and stated by Mr. Ernes, it appears that the experiment was tried by the parties partaking of milk immediately after it was drawn from the cow, and therefore the more likely to transfer the malady. It is pretty clear that, in the large establishments alluded to by Mr. Sewell, the parties do not partake of the milk in that way. I do not know whether Mr. Stavley ever took the milk of a diseased cow.

Mr. Stavley.—I have milked them, and taken it many mornings in succession.

The President.—Do you mean to say you have taken specifically milk from a cow labouring under the disease, and unmixed with other fluids?

Mr. Stavley.—I have: I did not know at one time where I was to look for a healthy one.

Mr. Simonds.—I have heard of an instance where the disease shewed itself in a pig, from partaking of milk, the disease not having been previously on the premises.

Mr. Barth.—A child, between three and four years of age had the disease communicated by new milk. I saw it several times, and I have not the least doubt that it was the same disease with that which we have to treat in cattle. There was an extensive eruption in the lips and mouth, and vesicles on the tongue and fingers. The latter were very sore and cracked, and small pustules formed on them. The vesicles also extended to the inner surface of the knee-joint. The servant was in the habit of giving the child milk at the cow-stalls in the Park. The medical gentleman attending the child said he knew not what to make of the disease; he had never seen it before: but on describing the disease existing in cattle he agreed with me as to the cause. Unfortunately I have had no opportunity of making inquiries as to the state of the cows whose milk the child took.

Mr. Ernes.—Dr. Gilmeister says that, to his knowledge, there was a family of three children attacked with this disease. Vesicles appeared on the lips, on the inside of the mouth, and on the gums.

The President.—Is he of opinion that it arose from the effect which the milk produced on the stomach of the individuals, or from its being brought in contact with the mucous membrane of the mouth?

Mr. Ernes.—From the latter cause.

The President.—Dr. Gilmeister has not stated any thing in the Essay about the condition of the lactiferous gland. Is it ever attacked in the chronic stages?

Mr. Ernes.—He never has observed any case in which the vesicles appeared on the udder.

Mr. Stavley.—I have invariably met with vesicles on the teat.

Mr. Ernes.—Dr. Gilmeister says that there is no ulceration, except in the latter stages; and if there be true vesicles, there can be little doubt as to the nature of the disease. The ring of the vesicles in this malady is sometimes of a blackish, brownish, or reddish colour, and is not circumscribed like the cow-pock.

The President.—We have in this country, both in the pig and in the cow, when affected with this disease, precisely the same sort of vesicles as those which appear in the mouth. Abscesses are subsequently formed.

Mr. Ernes.—Dr. Gilmeister says, that he has been much interested by the observations made this evening; but it appears that there are complications in the disease, as it has existed in this country, which he has never noticed in Germany, either in his own practice or in that of gentlemen with whom he has come in contact where the disease has prevailed.

The President.—The time for adjournment has arrived, but we cannot close this meeting without expressing our thanks to Dr. Gilmeister for the very interesting Essay which he has brought before us relative to a disease which has been making great ravages amongst cattle, not only on the continent but in this country. There are various points of analogy in the affection as it has appeared both here and there, but we have noticed some peculiar symptoms relative to the lactiferous gland which it does not appear that he has seen. I trust that his Essay will be rendered increasingly valuable by its eliciting others from gentlemen in this country.

Dr. Gilmeister was unanimously elected a Fellow of the Association.

JUNE 2, 1840.

Mr. Dunn, V.P., in the Chair.

Mr. Isaac Fisher presented a paper on

INFLAMMATION OF THE LUNGS IN THE HORSE.

With the press of matter lying before us, and this being the last number but one of our periodical for 1840, we can give only a slight sketch of the Thesis and of the debate which ensued.

Mr. Fisher described the occasional stealthy progress of the disease in its early stage, and then the characteristic coldness and wide and fixed position of the limbs, and dilatation and injection of the nostrils, and anxiety of the countenance, and indistinct and oppressed pulse, together with the frequent strange absence of cough, or the short painful one that may occasionally be found.

The causes of the disease next occupied his attention; all of them more or less connected with change of temperature, impure air, and suddenly increased and undue exertion.

At the head of the remedial treatment were bleeding, and external inflammation, and both most promptly and efficiently applied, and the first fearlessly repeated while the state of the pulse and of the animal generally indicated that the disease was unsubdued. The ointment of cantharides was the most effectual vesicant. The necessity of removal to cold and pure air was very properly insisted on, and the production, by friction, of an equable temperature in the animal: laxative medicine, but not drastic purgation, was recommended. The importance of this was properly insisted on. In order to produce a sedative effect, the extract of belladonna in doses of from ʒii to ʒiiij was recommended, with the solution of acetate of ammonia, spirit of nitrous ether, and, the acute stage being passed, digitalis, emetic tartar, and nitre—the water chilled, and green meat allowed.

The various terminations of the disease, and the post-mortem appearances, were then briefly but satisfactorily considered.

In the debate on this subject *Mr. Faulkner* advocated the occasional exhibition of a diffusible stimulant, as nitrous or sulphurous ether, when the patient appeared to be in a state of collapse, and the blood would not readily flow.

Mr. Evison recommended gentle exercise in preference to stimulants.

Mr. Serle deprecated the recourse to stimulants in the early stage of the disease.

Mr. Dunn adverted to the irritable state of the intestinal canal in this disease, and the extreme caution with which purgatives should be administered. Not more than one or two drachms should be ventured upon at first. Drachm-doses might afterwards be given until the desired effect was produced.

Mr. Cresswell advocated the use of nitre and digitalis, and sometimes he had given tartarized antimony in combination with aloes.

Mr. Cartwright directed the attention of the meeting to the symptoms and treatment of chronic pleuritis so perfectly dissimilar from the acute stage. In the chronic stage, the lancet should rarely or never be resorted to, but the principal reliance must be placed on sedatives and counter-irritants. Chronic disease of the liver often simulates inflammation of the lungs. The practitioner should be thoroughly aware of this, for an error here would be fatal.

It was asked whether belladonna in one or two drachm-doses would not affect the iris. *The Secretary* replied, that in very large doses, much larger than those recommended by Mr. Fisher, it would produce dilatation of the pupil, but in doses that had been mentioned there was no danger. Mr. Mavor, of Bond-street, had remarked to him, that he had never seen this effect produced on the horse. He therefore was inclined to think that there would be no danger in its use on this account.

Mr. Faulkner observed that it sometimes acted on the bowels, and occasionally produced a degree of nervous irritability.

Mr. Dunn reverted to the case of the foal. He had seen many cases of pneumonia in foals from a fortnight to three weeks old. The mare was kept in a warm place until she foaled, and then she and her little one were turned out into a paddock during the day. Pneumonia is thus produced in the foal, and the attack is often fatal. Very little medicine could be exhibited to these youngsters. He had bled two or three, and they had all died.

Mr. Fisher said, that laminitis occasionally supervened. He should take off the shoes, but not pare the soles; bleed from the toe, and give the feet as much pressure as possible in order to unload the veins. Heavy horses were most subject to this metastasis of laminitis.

Mr. Sibbald coincided with this, but urged the necessity of warm applications to the feet in these cases. Cold lotions would be likely to produce most serious consequences: mortification was the result of the constriction of the capillaries, and the circulation of the blood through the foot was arrested.

The Secretary believed that the remark made by Mr. Sibbald respecting the influence of warm water was in perfect accordance with good surgery, whether applied to laminitis, or to phlegmonous inflammation in any part of the body. Cold is productive of mischief in the acute inflammatory stage, causing either debility or pain; whereas by the use of fomentations we relax the vessels—the capillaries are emptied of their contents, and the deep-seated vessels thereby become relieved. As a general principle it is best to use warm applications in the first stages of inflammation, and subsequently to employ cold ones. He had seen more benefit result from warm water in the first stages of laminitis than he ever witnessed from the employment of cold.

The debate now turned on the detection of one of the terminations of pneumonia, namely, effusion into the cavity of the chest, and, according to Mr. Faulkner, the gradual cessation of the respiratory murmur from the floor of the chest upward would plainly indicate the rise of the fluid in the chest.

Mr. Sibbald added, that the coming off of the hair was a good test of effusion in the chest. A large post-master whom he knew would take hold of the mane or the tail, and pull out a few of the hairs. If they came out easily, he would say "It is all over with him." Mr. Sibbald had found this to be invariably the case, and not to so great a degree in other terminations of inflammation of the lungs as in this.

The question of counter-irritants was then mooted. *Mr. Dunn* always had recourse to a blister on the side in the first stages. *Mr. Faulkner* waited until the urgency of the symptoms was somewhat lessened, and he then had recourse to the acetous infusion of cantharides; in chronic cases rowels had exceedingly good effect. *Mr. Sibbald* advocated the use of the blister, and

said that he had never known any inflammation of the kidneys, or violent diuretic action supervene. His blister was composed of equal parts of cantharides and euphorbium mixed with lard. *Mr. Faulkner* related a case of vesication not being excited by the application of the blister: excessive strangury was produced, and the animal died. *Mr. Sibbald* replied that, where vesication does not appear, there is little chance of the animal living.

Mr. Wallis thought that sufficient attention had not been paid to the withdrawing of blood. He objected to all definite quantities, and would be guided by the state of the pulse alone. He would invariably carry on the bleeding until the pulse faltered or the animal fell. Considerable perspiration would follow the state of syncope, and, if the animal was then kept well clothed, the vascular plethora would be relieved very considerably. He had seldom seen a case do wrong where this perspiration had been excited and kept up. He had no objection to their being placed in an airy yet comfortable box, but he decidedly objected to that system of exposure to cold which formerly destroyed its thousands.

Mr. Cartwright perfectly agreed with Mr. Wallis. It seemed to him to be quite incongruous to turn a horse into a cold place while diaphoretic medicine was administered.

JUNE 16, 1840.

The President in the Chair.

Mr. R. S. James was elected a Member.

Dr. Hodgkin presented to the Library "Rapport sur un Memoire de M. Foville, intitulé, Recherches sur la Structure de l'Encephale," &c., and "Considerations sur la Structure de l'Encephale, &c. par le Docteur Foville."

Mr. Daws read the following paper on

BIN-IODIDE OF MERCURY.

Gentlemen,—It will, doubtless, be recollected by many of you, that in the early part of the session, Mr. Wills introduced to your notice, through the medium of this Association, a somewhat novel external application of the bin-iodide of mercury. I then expressed myself indebted to him for the introduction of this medicament. I again thank him for it, and, in accordance with my promise upon that occasion, cheerfully communicate the results of my experience, having had several opportunities of testing its effects.

At the suggestion of my late pupil, Mr. Hughes, whose chemical abilities are well known, I formed the compound by the simple admixture of iodine and mercury, instead of adopting the formula recommended by Mr. Wills, the product being nearly similar.

Thus, 2 equivalents of iodine = 252; 1 do. mercury = 202; which may be reduced by division to the proportions of 5 to 4.

In forming this compound, the addition of a small quantity of rectified spirit facilitates the necessary trituration in a mortar.

Much heat is evolved during the combination of the two substances, sufficient, indeed, to inflame the spirit, which vaporizes in conjunction with a small quantity of the iodine that is given off at the same time. This gas proves very irritable to the lining membrane of the air-passages of those persons who respire it.

Its effects in the form of ointment, one drachm being mixed with an ounce of adeps, will be in proportion to the frequency of its repetition, producing a slight pustular eruption, a vesicant, or caustic effect.

To morbid deposits of lymph, callosities in tendons and ligaments, &c. its action seems particularly directed, readily producing absorption of the extraneous matter.

As an external applicant, the effects upon the absorbents of the part are similar to the internal administration of the diniodide of copper.

The relation of the following cases will exemplify its operation:—

Case I.—*March* 18. A bay horse, the subject of curb—ointment applied daily. 20*th*. A slight pustular eruption apparent, with desquamation of the cuticle. 23*d*. The superficial absorbents near the hock are moderately enlarged, and tender; the tumefaction and lameness gradually subsiding.

Case II.—*March* 29. A bay mare, which had been severely ridden through the winter. Much thickening around the flexor tendons of both fore-legs; one application produced vesication. In due time it was repeated, and by the 20th of April the adventitious deposit had been completely absorbed.

Case III.—*March* 10. A bay horse, lame in the near fore-leg, from enlargement of the theca of the flexor tendons above the fetlock joint: much chronic inflammation present. 22*d*. The skin has become vesicated, and some infiltration into the cellular substance of the leg.

The lameness has subsided, and the parts have become gradually lessened.

Case IV.—*May* 9. A chestnut horse, with curb: similar effects to the preceding.

Mr. Daws.—I used this ointment of the same strength in all cases, because it answered my purpose extremely well. I never found much irritation produced by it. Some horses have scarcely evinced any pain; they have not shewn the least disposition to rub it off; they generally have been turned into a loose box. I do not apply it in acute cases, but sometimes in chronic cases there is a great deal of inflammation about the limb. The application has a peculiar effect on the absorbents going the part. If we apply it two or three times a day for two or three days, the superficial absorbents will become almost as large as our finger, and then I think it is time to desist. I have never carried it so far as to produce purulent discharge: when I have observed pustular eruption or vesication, I have ceased to apply it.

The Chairman.—Do you mean to imply that it is a matter of chance whether it produces vesicles or pustules?

Mr. Daws.—One application may produce pustules; a second, vesication; and if carried to a great extent, I have no doubt that it will produce sloughing to a considerable degree.

The following Letter from Mr. W. Rush, V.S., Harleston, was next read:—

ON THE USE OF OPIUM IN BRONCHITIS.

My dear Sir,—The object I have in view in making the following observations will not, I feel assured, be misinterpreted. Whatever contributes to the advancement of veterinary medicine cannot fail of being received with approval by the members of an Association especially formed for the benefit of science; while each will feel a pleasure in contributing towards so desirable an intention, and thus by co-operation effect the desired end.

Perhaps, too, the use of the agent as here advocated may lay claim to some novelty, and be acceptable; be that as it may, the remarks made on it I hope will prove useful.

I am, &c.

Mr. ———, of Harleston, in April, 1839, brought home from one of the large Yorkshire horse fairs a six-year-old black mare, worth thirty-five guineas. She was dieted, groomed, &c. *secundum artem*, and, excepting a thickening of the legs, she was, in six or seven days, fit for show. On the morning of the market day she was introduced to the show stables, and she was drenched with *their* never-failing specific for swelled legs, &c. viz. ℥iv pulv. resinæ in water! Two hours afterwards I was called in.

The mare would not feed, the ears were cold, and her whole frame felt chilly. She had coughed several times, but not violently; her pulse was about 60, and feeble. No mention was made of the drench, as the owner did not imagine it had caused any harm. Her ears were well pulled, the extremities rubbed and bandaged with flannel, the body clothed, a fever ball administered, and the diet restricted to mashes.

At four P.M. I was hastily summoned to attend my patient, when I found her affected with rigors, the breathing quick and evincing pain in the effort, the pulse 70, small and irritable. I gave nitrat. potass. ʒij, camph. ʒj, ammoniæ S. carb. ʒj, and honey sufficient for a bolus.

At eight P.M. my poor patient was in a most painfully distressing state. Her fore legs were made fixed points, and the serratus magnus was called into action to assist in respiration. The breathing had become stertorous, short, and quick; the pulse 85, and of that peculiar irritable kind in which I *never abstract blood*. I repeated the medicine as before ordered, giving gruel. We watched her until ten P.M., during which time she expressed so much pain as would have confounded those who think beasts have no feeling. Mr. ——— wished me to bleed her. I hesitated; but as she evidently got worse, I felt at a nonplus, having cause to know the ill-effects of phlebotomy, incautiously had recourse to. I therefore expressed a wish to leave her a short time, thinking a change would be more readily perceived after absence.

In a conversation that followed, mention was made of the morning drench. A bright flash of hope darted across my mind, and I thought the mystery of her affection entirely dissipated. I imparted my suspicions to him, ran to the pharmacy, and having obtained a lump of crude opium, made an impalpable mixture by rubbing down ʒj of the opium in ℥ij boiling water, and adding to it half a pint of cold gruel: this I carefully strained, and administered to my still intensely suffering patient.

I could hardly suppress the outburst of joy when, in a quarter of an hour afterwards, I felt satisfied the patient had improved. I gave immediately a similar dose, and at twelve P.M. her breathing was comparatively tranquil—her extremities had a warmth which betokened returning circulation, and her pulse had sunk to 58! I left two more ʒj doses prepared as the others, ordering one to be given in two hours' time, and the other at six A.M. if the mare did not continue to improve. The third dose was given; and about three A.M. the mare lay down, and (as they told me), slept soundly.

I saw her on the next morning about nine o'clock, and felt convinced that my prognosis had been correct. I ordered a different diet, gave small doses of antimonial powder, camphor, and digitalis made into balls with honey; and in two days she was so far recovered as to require no more attention than Mr. ——— could himself supply.

About the middle of May, a fortnight after the latter case, a chestnut cart-horse, 5 years old, belonging to Mr. ———, of Needham, was brought to our infirmary. He had been one long journey at plough, and, being allowed to stand in a pond of water to drink while he was warm, was immediately seized with shivering and considerable uneasiness: this was about four P.M. He was baited with the other horses, but refused his food, and manifested increasing uneasiness, in consequence of which, he was sent to Harleston (two miles), as I have before stated.

Having received this information, and examined him, as well as his warmth from walking would permit, he was bled eight pints, and ʒiv aloes Barb. were given to him in ball.

Two A.M.—A man awoke me with reiterated hallos and appeals to the knocker. He said the horse was dying, and had been getting worse ever since he returned home. I immediately attended, and on examining my patient, found in the case an aggravated resemblance to Mr. ———'s mare. The position of the fore extremities was the same, but the pain evinced was very acute.

The owner had retired to bed, not being able to endure the sight and denouncing the propriety of sending for us, as the horse was, in his opinion, worth nothing. Having examined the pulse carefully, I was more satisfied as to the resemblance of the two cases, and immediately gave two drachms of opium mixed as before, but substituted cold milk in the absence of gruel. A powerful opiate enema was administered, and I retired to the house for a short time to await the result. Before long the carter ran in to say that the horse was better; and indeed he was. I gave two drachms more after an hour had elapsed, and at half-past four A.M. I had the satisfaction of seeing him lie down, with a pulse which assured me that I was right in the view I had taken of the case.

At nine A.M. I called and found the horse still improving. I then ordered antimonial powder, camphor, and digitalis with honey in a ball; and in four or five days, after careful nursing, he was pronounced convalescent.

The administration of opium in these cases was not the result of having seen it so used or recommended, but from the astonishing sedative action I had observed to be produced by it when given in large doses to horses suffering acute pain from various causes, especially enteritis and spasmodic colic.

You may feel surprised at these large doses of opium; but in enteritis and in spasmodic cholic I have administered as much as from ʒvj to ʒj of crude opium in six or eight hours; and in this my brother, Robert Rush, of South Lopham, at least equals, if not surpasses me. We have been as successful, I should think, as most practitioners in the treatment of enteritis; nor do we find that constipation of the bowels follows the use of opium, which some have written and spoken of. I have now and then witnessed an apparent suspension of the intestinal action after enteritis; but this is far more likely to be the result of the acute inflammation than the effect of opium; and in this opinion I am supported by the judgment of my father, who has practised forty-five years, and who has seen death follow this paralysis without having used any opium.

Mr. GRESWELL then read an Essay

ON INFLAMMATION OF THE MAMMILLARY GLANDS IN THE MARE, COW, AND SHEEP.

To the President and Gentlemen of the Veterinary Medical Association.

Gentlemen,—In introducing this Essay for your consideration, I feel that any apology on my part is uncalled for, as I am happy to be enabled to say, that our yet infantile science has made rapid advances during the last few

years; and the studies of the pupil of veterinary medicine at the present day not only embrace an intimate acquaintance with the structure, function, and economy of the various organs of the horse, but of all our domesticated animals; which additional acquirement, I am firmly convinced, will be of incalculable benefit to us all in our professional avocations.

It is, however, incontrovertible, that cattle pathology, until of late years, has been regarded as beneath the dignity of the educated veterinarian; and the practice of it as derogatory to his professional character. But now, it may be said, a new era has commenced, and the restorative and preventive treatment of all diseases in all quadrupeds is consigned to the qualified veterinarian rather than to one of the brave sons of Vulcan, or the self-sufficient groom.

In conclusion, allow me to state, that I trust an emulative spirit—the great incentive to industry—will continue to predominate amongst us; and if it can be hereafter said, that I have contributed any thing to the general stock of veterinary knowledge, it will sufficiently compensate me for any little trouble I may have taken.

This disease in the mare is not of such frequent occurrence as in the cow or sheep, from the mare generally receiving more attention at the time of parturition than these animals do. The glands of the cow likewise, in the generality of instances, are contrived to yield their peculiar secretion at the time of calving, whereas the glands of the mare are longer in adapting themselves to it, and thus they accommodate themselves more gradually to the wants of the offspring. It often arises from keeping the mare for a great length of time from the foal, without drawing the udder. The milk will then induce irritation followed by inflammation. I have known it to arise from a want of attention on the part of the owners, who, in many instances, after weaning the foal, neglect to draw the bag once or twice a day for a short period; and it is possible that it may have its origin in other causes not by me enumerated.

The Symptoms are a swelling of the udder, which is very hard and tender, and that extending to the thighs and abdomen, with a quick irritable pulse and a high degree of fever.

Treatment.—In general it is the case, that we are called upon to treat this disease in the mare before it has made such progress as it often is allowed to do in the cow: this arises from its being considered very dangerous in its nature. The treatment I advocate consists in bleeding, if the pulse indicates its necessity, and giving cathartic medicines. I also insert a rowel or a seton at a little distance from the parts affected, and use fomentations to the udder, and, subsequently, evaporating lotions. After the bowels have been well acted upon, I would administer diuretic and febrifuge medicines, combining these with sedatives if the febrile action continues. If the inflammation should run on to the formation of an abscess, or terminate in gangrene, I should make use of similar treatment to that recommended under the same disease in the cow.

Cows, and more especially heifers, are the victims of this malady; for soon after parturition, from an altered as well as an increased secretion going on in these most important glandular structures, tenderness and irritability are produced, in consequence of pressure on the nervous fibrillæ of the parts. They are also very subject to this disease at the time the grazier turns them out to fatten, as in the generality of cases he removes them from a poor keep to a very nutritious and succulent pasture; thus suddenly increasing the arterial supply to those depending parts; and those glands not being capable of adapting their secerning functions to the augmented volume of blood. The consequence of this is, that the milk is increased in quantity and altered in

quality from stagnation and consequent coagulation of the fluid in the lactiferous cells, thus inducing local inflammation; or it may be caused by calculous concretions or sore teats.

There are some localities in the county of Lincolnshire, where I have practised, in which it is a very rare circumstance to have cows or heifers fed upon the land, without their becoming affected with this disease. This I consider to depend upon some unknown vegetable product, and which has a decided action, not only on the mammillary glands, but also on the synovial membranes.

The breeds that are most subject to this disease are those which yield much milk, and it occurs immediately after their first calving. It is very common in the marshes, in consequence of the animals lying on the ground, which is often saturated with moisture. This by evaporation causes a debilitating effect on those parts, and thus induces disease. I have no doubt that it is also often produced by external injuries, and by various other causes, such as a deleterious atmosphere, &c. &c.

Some cows require a preventive treatment, more especially those in a plethoric state. In such cases, I would give a mild cathartic about a week before calving, and let them take exercise at their pleasure, allowing them a moderate quantity of provender, but not of a very nutritious kind. In some cows the udder is distended before calving: in such cases they should be milked regularly.

When graziers turn out their cows for fattening, if they are not dry, I should recommend an astringent to be given, commonly called a drying drench, such as alum, from ℥iv to ℥vi, Epsom salts ½lb., and vinegar, from ℥iv to ℥vi. To be given in one pint of water, and repeated if requisite. The udder should also be partially emptied two or three times a week.

Symptoms.—In the first stage of this disease, the cow will be found to give an increased quantity of milk, which will be shortly afterwards succeeded either by a diminution or an entire suspension of the secretion. The gland will swell and feel hard and tender, which will probably be followed by swellings of the joints and stiffness in the gait, with the hind legs placed wide apart. The dewy muzzle, that characteristic symptom of health, will leave her; the appetite will be lost, and rumination suspended. There will also be a high degree of fever, and a quick and hard pulse. The ears, legs, and horns, will be intensely cold. The milk will, in some instances, appear as if mixed with blood; in others, it will be of the consistence of soft curds. Abscesses will frequently form in different parts of the udder. The milk vein is generally enlarged on the affected side. Inflammation of some of the synovial membranes will occasionally be observed, and, in some cases, terminate in ulceration or anchylosis. If the disease is allowed to take its course, after it has arrived at this stage, the bag will become black, and death of the part will ensue. The beast will be generally found in a prostrate position, turning her head towards the diseased parts, and moaning from intensity of pain; her pulse becomes nearly imperceptible at the jaw, and death too frequently closes the scene.

Treatment.—Should my patient be in good condition, and the pulse much accelerated, I would bleed from the milk-vein, and give a dose of cathartic medicine, such as mag. sulph., aloes, and sulphur, combined with stimulants; the latter medicinal agents being indispensable in cattle practice. After I had opened the bowels, my next object would be to excite the liver and kidneys to increased action. I have made use of fomentations topically in this disease with considerable benefit, and I consider them most efficacious if frequently and carefully applied; but we cannot, in the generality of instances,

meet with persons either calculated or willing to comply with our wishes. After the employment of fomentations, I have usually resorted to evaporating or refrigerant lotions, consisting of spirits of wine, vinegar, the diacetate of lead and water. If the inflammation is deep-seated, I would have recourse to gentle stimulants, and which I have used with invariable success. I consider that they act as counter-irritants. It is also good practice in the first stage of this disease to allow the calf to suck, and, if necessary, we must render manual assistance, and thus get rid of the superabundant milk. At this period I would insert a seton on either side of the abdomen, at some distance from the udder, and keep it constantly dressed with the oleum nigrum, which is the quickest agent we can employ to induce the suppurative action in the skin of those animals. After I have augmented or restored the secretions, and if the pulse still continues high, I would have recourse to sedatives, such as ext. of belladonna in doses from ʒij to ʒiij, which I prefer to all other therapeutics of this class. Deep scarifications are of the greatest importance in this disease when the bag has become gangrenous; and I would administer diffusible stimulants, combined with aromatics, such as spirit of nit. ether, carb. ammoniæ, with ginger, gentian, and the bowels being carefully attended to. The scarified parts I would dress with a saturated solution of the nitrate of potas, or, if requisite, with the oleum nigrum. Excision of the glands is sometimes necessary, either wholly or in part; but I would neither recommend nor perform the operation on the animal if much debilitated, as she would be likely to sink under it.

This operation is a simple one, and consists in making a circular or semicircular incision above and through the diseased parts. The hæmorrhage may be stopped by ligature. In some instances we need not apprehend any hæmorrhage in consequence of the complete death of the parts. After exciting the suppurative action, the ulcer may be treated as a common wound; and tonics administered if requisite. This inflammation may run on to the formation of abscess instead of gangrene, which is its general termination. The abscess is usually very tardy in its formation; and the best measures to be adopted in such cases, are to lay it open with a large sized lancet, and dress it with digestive ointment. In some instances we must set up the sloughing process by the application of a caustic, and the parts will then readily heal. Occasionally, as a consequence of inflammatory action, we have a scirrhous state of the glands; and the best method to counteract this is that recommended by Mr. Youatt, in his invaluable work on Cattle, viz.; the iodide of potassium, mixed with the milder ointment of mercury. Its application calls for a considerable degree of friction, and it produces its effect by causing absorption of the deposit. If ulceration of the joints should supervene, they will produce an excessive degree of irritation, and, in the generality of cases, carry off the patient. In such instances fomentations and quietude are the best remedies that can be had recourse to. The teats may, in some instances, be slit open with benefit.

Post-mortem appearances.—In dissection I have found indications of extensive inflammatory action having existed in the glands themselves, with dark or livid blotches, and, frequently, complete sphacelus in different parts of their parenchymatous structure. Gangrene more frequently attacks the surrounding cellular tissue, causing that sloughing which so often accompanies this disease. In some instances there will be several deep-seated abscesses, containing unhealthy looking pus, which has generally a disagreeable fœtor. On examination of the genital organs, I have remarked that, in some instances, these parts participating in the inflammation, and likewise the bladder has been in a high state of inflammation.

The ewe, like others of the class Mammalia, is liable to frequent attacks of this disease at the period of parturition, and also at the time of removing the lamb. It will also arise from sudden atmospheric changes, or by lying on wet grass, &c., and by the ewe not allowing the lamb to suck when the teats are sore, thus producing coagulation of the milk in the udder. It sometimes takes place when the ewe has twins, and one of them dies or is taken away; the consequence of which is, that part of the secretion which nature had provided is uncalled for, and becomes a source of irritation, which is followed by inflammation. It often arises from shearing all the wool off those parts in order to prevent the ewe from clogging; also from shearing of the body, when the natural warm covering being removed, the animal becomes exposed to the chilling blast, or the rain which, at this period of the year, frequently descends in torrents, and by which she is rendered more liable to inflammatory attacks, of which the udder is in general the seat. Nor are we surprised at this, knowing that there is a great determination of blood to those glands at this time. The preventive treatment will consist in keeping them low for a week or two before parturition; also examining them to see that there is no obstruction in the teats at this most important period.

The symptoms of this disease in the ewe are very similar to the same affection in the cow; viz. she will desert her companions, and walk very stiffly. These premonitory signs will naturally awaken suspicion, which, being confirmed, the treatment will be nearly the same as that advocated for the cow. As a laxative, the sulphate of magnesia may be given in quantities varying from from ʒij to ʒiv, combined with ginger, and dissolved in half a pint of water. When the bowels are opened, nitrate of potassa may be exhibited in doses of a drachm, to act upon the kidneys. In some instances the udder may be lightly scarified. It is unnecessary for me to proceed any further with the treatment, as it is similar to that of the same disease in the cow.

Mr. Cartwright.—I have been very much pleased while listening to the valuable practical essay just now read, especially as it is on a subject that has not, before this evening, been introduced into this Association, so far as I am aware, there having, indeed, been a great dearth of essays connected with cattle practice.

As to the author of the Essay, I know him well. He is fully competent to the task of defending it, and he is not one of those who are likely to take the *ipse dixit* of any man without examining for himself. I can honestly say of him that, since I have had the pleasure of his acquaintance, I have always found him to be a most intelligent, persevering, and industrious student, both in the dissecting room and out of it; and I have no doubt that he will one day be an honour to the College from which he will shortly emanate, and a most useful and invaluable practitioner in that neighbourhood which may have the good fortune to have him settle among them.

I have met with several of the cases which Mr. Gresswell has described, and, perhaps, may be permitted to make a few observations on them. Ewes are frequently subject to sore teats. I have seen many instances of it. It also takes place very often in cows that are turned out, not only among those which are poor, but in the best condition. Although the udder may be of its natural size, and apparently not at all diseased on the over-night, it will sometimes be found on the next morning enormously enlarged. The cause of this I can hardly assign. I have now and then seen cases where cows have been left dry the previous year, and the udder has apparently been quite well, yet on going to milk them after calving, it has been found that they have two or three small tumours in the teats. The cause which has produced them I cannot state, and I have not been able to cure them. I have introduced tubes,

and used pressure, but have not been able to succeed in dispersing them. The introduction of the tubes has caused a great deal of irritation, and I have been obliged at last to cease meddling with them, and let the cow go dry. Ultimately, abscesses have formed in the udder, which I have had much trouble in healing.

Sometimes, after calving, engorgement of the udder will take place to an enormous extent. While I was an apprentice, we were called to attend a cow labouring under garget, that had existed for six or eight months. My master cast her, took away the whole of the udder, which weighed from sixteen to twenty pounds, applied a ligature to the large bloodvessels, and for a fortnight she appeared to be going on well. A large stack fell upon her and killed her, or, in all probability, she would have perfectly recovered. Sometimes one quarter has sloughed away, sometimes two, and extensive inflammation has taken place in the whole of the udder. That having been subdued, the two quarters which have been left have milked uncommonly well, and given almost the usual quantity.

Mr. Gresswell has stated that in inflammation of the udder, he would draw blood from the milk vein. Mr. Youatt, a gentleman to whom we are all under great obligations for what he has written on this disease, disapproves of this mode of treatment, at which I am rather surprised, for I have found it excellent practice. On examining the parts, I find that the vein, instead of arising, as he says it does, it proceeds from the udder, and part of the blood is returned to what Sir Astley Cooper terms the epigastric vein, and part by the milk vein, into the thoracic vein, where it opens into the thoracic duct. Mr. Youatt has quoted the authority of Girard; but I consider that they are both in error. The blood returns, no doubt, from the abdomen to the different branches that arise therefrom, many of which are very deep, branch forward, and go to the superficial vein. It has occurred to me, that there may be pressure on the epigastric vein, that the blood is thus obstructed in proceeding to the iliac veins, and if so, it would be conveyed into the internal pectoral vein.

These cases sometimes assume a scirrhous, but not a cancerous character. The disease more frequently goes on to the sloughing process; some of the ulcers assume an unhealthy action, and there is great difficulty in healing them up. In fact, an abscess forms, and, as in all other glandular parts, it is very troublesome to heal. In some of these cases, where there has been great enlargement of the udder, or tumours in it, I have thought that the disease has depended, in a great measure, upon constipation of the bowels; for I have experienced much difficulty in acting upon them.

As a purgative, I have given sulph. magnesiæ combined with ginger; the former alone I found very inefficient, but combined with a carminative, it had a better effect. I think it is a good practice to combine the different purgative medicines for cattle.

Has Mr. Gresswell ever met with any small kernels or tumours in the teats, and how does he think that they are produced?

Mr. Gresswell.—I have seen many, and I should attribute them to the newly-formed secretion not having taken the right course. We generally find them soon after calving, perhaps on the fourth or fifth day. I think the best application is stimulants.

Mr. Cartwright.—I have no doubt that they must have been gradually forming for some time, for there is not the least inflammation about them. They are about the size of marbles, and appear of a scirrhous nature. They are found about three-fourths of the way up the teat. There may be a small portion of milk between the tumour and the external opening. We can force that out; but we cannot procure the milk from above without intro-

ducing a tube; by that means, however, you may draw it away. Although Mr. Gresswell has not recommended the use of tubes, I should decidedly advocate them in the early stages of the disease: I think there would be no use in employing them when the milk has become coagulated,.

The Chairman.—With regard to bleeding from the superficial abdominal vein, which you say you have done frequently, have you found any difficulty in stopping the hæmorrhage?

Mr. Cartwright.—I have occasionally. I am not altogether friendly to bleeding there; but it has a good local effect.

The Chairman.—While I perfectly accord with you in regard to the function of the vein, and the course which the current of blood takes in it, I differ from you in considering that by detracting blood from the vein you produce more local depletion of the capillary tissue of the udder itself than you would by detracting blood from a large vein ramifying in any other part of the system. I am of opinion that there is no local benefit produced on an inflamed part by the detraction of blood, unless it is actually taken from the capillary tissue by cupping or scarification of the part affected. I sometimes bleed from the brachial veins of lame animals, but there is no peculiar advantage in it. If the veins are large we can make an impression on the constitution by this means, as well as by detracting blood from the jugular veins. If there is any difficulty in stopping hæmorrhage from the superficial abdominal vein of the cow, I should not feel justified in opening the vessel. I would rather bleed at once from the jugular vein.

Mr. White.—Does Mr. Cartwright think that the application of iodine would be of service in removing the large tumours found in the teats?

Mr. Cartwright.—I have little doubt that it would be of use; but in the cases I have seen, the introduction of the tube has caused so much irritation in the udder above the tumour, that there has hardly been time for the iodine to produce its specific effect.

Mr. White.—I have seen a great many cases where there was enlargement of the upper part of the teat, but not general inflammation of the udder, and by the application of iodine absorption has been produced and the swelling has subsided. There was a tumour in the teat which quite obstructed the flow of milk. By the introduction of a silver probe, we partially removed the obstruction, and then by the application of iodine ointment the induration gradually became lessened, and there was no farther impediment to the passage of the milk.

These cases occurred when the cows were in full milk, and there was no inflammation of any other part of the udder.

Mr. Cartwright.—Is Mr. Gresswell of the same opinion as Mr. Youatt, that not milking the cows dry, but leaving a portion of it, is a great source of the disease?

Mr. Gresswell.—That is not my opinion. I think if you leave a portion of the milk, the cow soon becomes dry.

Mr. Cartwright.—I think it would not be likely to produce the disease.

The Chairman.—Yet Mr. Gresswell observes, that the retention of the milk acts as an irritant.

Mr. Gresswell.—Yes, if you leave in a great quantity, not if you take a certain portion away.

Mr. Dunn.—I have seen this disease in fox hounds, the tumours have gone into a cancerous state, and we have been obliged to remove a portion of the udder.

The Chairman.—I believe that, from your practical experience, you are of opinion that this is a disease which more frequently attacks one portion of the gland than the whole. It is not often that the whole gland is implicated.

Generally, it is one, two, or three-fourths, and the remaining part will for a time carry on the function. This being the case, would you not rather refer the disease to some function of the teat primarily, inducing retention of the milk, and that acting as a secondary irritant in bringing about the disease, than to constitutional causes. Is there any thing peculiar in the structure of the gland, by means of which you can account for its attacking one part of the gland only?

Mr. Gresswell.—Yes; its being divisible into four parts, each part being independent of its fellow.

The Chairman.—It is a wonderful provision of nature, that there are certain distinct glandules of which it is made up, each gland having its respective lacteal cells and ducts proceeding to its respective teat.

Mr. Gresswell.—The udder may be in a natural state over night, and the next morning very much enlarged. This probably arises from the side affected having been diseased before.

Mr. Dunn.—I have seen the whole of the udder removed, and in one instance a cow brought forth a calf afterwards; but I think it was not the intention of the owner that she should have again become impregnated. The calf, of course, was put to another cow.

Mr. Gresswell.—Young cows are oftener affected than old ones, sometimes after the first calf; but if a cow is once affected, she is very liable to be so again. The gentleman to whom I served my apprenticeship had a very singular case. We were sent for to a cow which had just calved. She had a large udder, but there was no passage for the milk. By bleeding, the application of setons, and the exhibition of laxative medicine, she got right again, and the milk became absorbed. The teats were imperforate. We might have operated upon her; but it would have produced a great deal of irritation and inflammation.

The Chairman.—You might have tried it upon one teat. You would have been warranted in doing that.

Mr. Twinberrow.—Have you met with many cases in those localities where it has been the practice to turn the calves out into the field?

Mr. Gresswell.—Not so frequently as when they have been kept up. It seldom comes in cows suckling a calf. I should, therefore, be inclined to attribute it to the milk being too long retained. It is more likely to be removed in the field than if the animal were housed.

Mr. Gresswell.—My friends are farmers. We rear a great many by turning them out, and very often putting two calves to one cow; and in these cases we seldom have the disease. If we were called in the early stage, we think there would be no danger; but the disease has generally made great progress before we are sent for. They are antiphlogistic means which we usually employ.

The Chairman.—I think sedatives are highly important in this disease. Do you not find that in operating on the gland you have some difficulty in bringing about the healing process?

Mr. Gresswell.—Yes; it is often three or four months before they get well. There is a watery discharge, and almost always a fistula of some sort. The operation is dangerous.

The Chairman.—I have never operated on the cow, but I have on a dozen bitches, where the disease generally assumes a cancerous form. I have taken away the whole or part of the lacteal gland, and I have found it more difficult to produce a healthy granulating process than, perhaps, on any other part of the body.

Mr. Dunn.—I performed the operation last summer on an ass; she did exceedingly well, and I should think it would be the same in the mare.

Mr. Evison.—Mr. White stated that he had used iodine ointment in several cases of enlargement at the upper part of the teats. I have also used it with very good effect, not only in such cases, but when one part of the udder has become thickened after the inflammation was reduced. Indeed, it not only caused an absorption of the deposit, but likewise of the milk. I am convinced that cows may be dried by the application of iodine ointment. I succeeded in one case by two or three applications, when the cow was very full of milk.

Mr. Gresswell.—I have seen it employed with good effect in drying cows.

The Chairman.—I think that is an important consideration, and I quite agree with you, particularly with reference to bitches and cats. It is our duty to alleviate their sufferings as well as those of larger animals. Many of these poor animals, after having given birth to six or eight young ones, all of which are destroyed, are left to chance. The lacteal gland is distended with milk, they suffer the most acute pain, and sometimes death ensues. Where the young ones are destroyed, it would be easy to have recourse to this medicament, and save a great deal of unnecessary suffering.

TUESDAY, JUNE 23, 1840.

Mr. Daws, V.P., in the chair.

Mr. E. S. Tucker and Mr. W. J. Godwin, veterinary surgeons, and Mr. A. C. Williams and Mr. J. Gillingham, students, were elected members.

The certificate of membership was awarded to Messrs. Evison, Bentley, Murch, Gresswell, and Cartwright; and of fellowship to Messrs. Evison, Gresswell, and Cartwright.

Mr. Barth.—There were laid upon the table two legs of a brood mare whose knees were much affected with the copper-smoke disease. He said—At the commencement of the session I had an opportunity of offering you some slight information on the effects of copper smoke, or the result of the deposit of some substance, at present unknown*, on the animals which graze within the precincts of smelting works. I have now to lay before you the two fore legs of a brood mare, which have been thus affected. There is, as you perceive, an immense tumefaction of the knees. Apparently, in the first onset, there is an enlargement or distention of the synovial membrane of the joint, forming considerable bursal tumours which afterwards become ossified. One of the cysts having been opened, a portion of the bony wall is perceptible. It affects various animals in different joints, but principally the knee joints. Where the copper works are very large, it is common in swine, and horses may often be observed working with knees similar to those before us. This mare first became affected at seven years of age, and the joints continued to enlarge until she was thirteen, when her owner had her destroyed. She was unable to move the joint or to lie down. She has bred many foals, but none of them became affected in this manner, on account of being removed from the locality as soon as possible.

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* At the last meeting of the British Association for the advancement of science, Dr. Schafheutl is stated to have ascertained that this destructive agent is a compound of arsenious acid and sulphuric acid.—W. J. T. M.

The following communications were then read:—

From Mr. METHERELL, *V.S., of Spalding, on the prevailing Epidemic.*

May 20th, 1840.

Dear Sir,—I have to acknowledge the receipt of your letter of the 18th, and I embrace the earliest opportunity of answering it. My opinion of the prevailing epizootic among the neat cattle of our district is this—that it is, in the first instance, decidedly a constitutional affection, and afterwards affecting certain parts only or principally. The earliest symptoms are dulness, immobility of the animal, staring coat, &c.; shortly after which an immense flow of saliva is recognized; and, on opening the mouth, large blisters are seen developed on the membrane lining the upper lip, dorsum of the tongue, and palate. In many instances the tongue has been enormously large and very hot; the appetite has not been totally lost, but mastication and deglutition have been performed with extreme difficulty. The pulse has been invariably accelerated, but seldom denoting the necessity of having recourse to venesection; and those practitioners who have adopted copious bleeding indiscriminately have protracted the cure in the great majority of cases, and in many instances have lost their patients.

Constipation of the bowels has seldom been a concomitant, but sometimes the fæces have been voided coated with a stiffish brown crust.

The constitutional treatment adopted by me has consisted in the exhibition of aperients; the topical, the solution of the nitrate of potassa, the blisters, previous to its application, being punctured with a lancet.

You expressed a desire for me to favour the Association with a more detailed account of the complaint. But the pressure of business will, I doubt, operate as a preventive: should, however, an opportunity present itself, I will do it with great pleasure.

I am, &c.

From Mr. GEORGE BALDWIN, *V.S., at Fakenham, on the prevailing Epidemic.*

June 8th, 1840.

Dear Sir,—During the present spring, diseases of the air-passages have been very prevalent in our neighbourhood. These have consisted of pneumonia, pleuritis, and pneumo-hepatitis. The cause, I think, is referrible to the very mild weather we have had.

Some few weeks ago, I had two cases of paralysis of the hind extremities in calves. I first bled them, and gave to each a dose of aperient medicine, subsequently stimulating the back and loins. I then exhibited scruple doses of the nux vomica twice a-day, increasing the quantity very gradually until it reached a drachm. There was evidently marked action induced by it, as the legs were frequently spasmodically drawn up. They did not, however, appear to gain strength, and, the owner becoming impatient, they were destroyed. Should similar cases hereafter fall under my notice, I shall be induced to try the influence of the medicament again. I would observe that the rectum seems powerfully affected by it; prolapsus ani occurring in both cases, and blood being passed with the fæces. Possibly it should be administered in smaller doses.

Lately we have been very busy with the epizootic among neat stock. When cattle are first attacked with it they are observed to froth at the mouth—this arising from an increased secretion of saliva; and, upon examination, the tongue and buccal membrane are perceived to be covered with vesicles con-

taining a transparent fluid, which, becoming opaque, burst, the cuticle then sloughs, and an abraded and highly irritable surface is left. There is also present much constitutional excitement; the eyes are sunk in their orbits—the coat stares, and the poor beast in a short time looks miserably thin. The febrile symptoms occasionally run high.

The feet also become affected with similar pustular eruptions and prove very difficult to heal. If, in this state, the animal is forced to move, she walks more like a horse affected with inflammation of the laminæ than any other disease to which I can compare it. The teats are covered with this eruption, rendering the act of milking a painful one, and sometimes impracticable.

I think the disease affects cows more than other stock; and, from the state of their mammæ, much pain is often evinced. I have seen large flocks of sheep labouring under the same disease. The loss of condition in these animals was very great. Their mouths are excoriated, and the feet are affected similar to those of neat stock.

The treatment I have successfully adopted has consisted in blood-letting, if the animal was in tolerable condition, and the symptoms warranted the use of the lancet. I think that this has afforded much relief. To this have followed aperients, and a lotion for the mouth consisting of a solution of chlorinated lime. Alum being added to this, more quickly caused the parts to take on the healing process, although the chloride effectually destroyed the nauseous fœtor. When the feet were principally affected, I have bled locally with decided benefit, and to the diseased sensitive parts I apply a mixture of tar and sulphate of copper.

Have you heard of the human subject having this disease? I do not know if the cases I am about to relate can be said to have originated from it or not, but a farmer, while drenching a cow labouring under the epizootic, had his hand cut by the animal's tooth. He took little or no notice of the wound; but in a short time his arm became very painful. Afterwards an abscess formed which was opened, and, ultimately, he got well, although his medical attendant thought at one time that he would lose his arm. A man looking after some cows I attended had a sore on his hand, with which the saliva came into contact. He became very unwell, and, as he told me, he felt feverish, weak, and giddy; and his fingers appeared to be drawn up and stiffened. I advised him to take a dose of aperient medicine, and apply the chlorinated lime-wash to his hand, which he did, and soon recovered.

I am, &c.

From Mr. Charles Dickens, *V.S., Kimbolton, on the prevailing Epidemic.*

Dear Sir,—The epizootic, which has for some months past been raging among the cattle in this country, has naturally created considerable anxiety in the minds of the agricultural community, and it will of necessity lead to much inquiry. To whom have they a greater right to look for information than to the veterinary profession?—therefore I would advise that body, that it behoves every legitimate member of it, for the credit and honour of his calling, to register his opinions and record the facts he has observed.

I am much pleased, through the pages of The Veterinarian, to find that the disease has already attracted the attention of a few of my professional brethren, and I refer with pleasure to Mr. Rush's valuable paper, and Mr. Wardle's excellent communication; and also to a very valuable Essay, reflecting

the highest credit upon Mr. Snewing, of Rugby, which appeared in the Farmer's Magazine for this month, a paper at once practical and scientific.

For such noble ends as these I conceive the Veterinary Medical Association was in part formed. But there are some of your brethren from whom, for the honour conferred upon them in being elected corresponding members, you have a just right to expect something in return, and which honour I take for granted was conferred for the purpose of eliciting information on diseases that may prevail in certain localities; thus making those useful whose hearts are with you, but who are prevented by distance from attending your delightful meetings. As one of that order, I venture to forward to you the annexed paper; and should the few remarks it contains, and the observations made, be thought worthy the attention of your Association, I shall consider that I have performed a pleasing duty in thus transmitting it.

Your's, &c.

I believe we have not yet arrived at a knowledge of the real cause of this malady, although many suggestions have been advanced by both theoretical and practical men; and on this point I would rather have been silent, had I not read, in the Transactions of the Agricultural Society, an opinion offered by a learned member of that body, Dr. Willan, which appears altogether unlikely, not to say absurd; and which opinion is followed up by the extravagant recommendation to plough up all our old and beautiful swards or pastures, because he attributes the disease to the buttercup (*ranunculus*). Surely the learned member, when going abroad, must have left his observant powers at home, or he would have known that cattle generally reject this plant, it being repugnant to their palate, although sheep will eat it with avidity. I cannot answer his reasoning in better language than did his Grace of Richmond, by reminding him that this innocent and beautiful flower has been as plentiful in every former year, and the disease unknown.

Again; the majority of the cases, and these the most obstinate that presented themselves in my practice—and I believe this to have been the case with many others—occurred before this flower made its appearance, and to those animals who were not even eating hay; so that they could not get this, by some, much-dreaded plant, even in its dried state, in which condition it possesses but little acridity.

The more likely cause seems to me to be that of the atmosphere being charged with some poisonous effluvia exuding from the earth, in consequence of the dry weather setting in so suddenly after the extreme wet. Bad provender, such as hay, tares, &c. I must certainly place among the predisposing causes at least; and, in some instances, I have thought that I have been enabled to trace it to that alone.

In many of the more obstinate cases that fell under my notice the patients had been living in this way; and we are practically acquainted with the fact, as it regards the human subject and our more general patient the horse, that there are many diseases to which both are liable, such as itch, gaol and ship fever, glanders, farcy, mange, &c. all of which are generated within themselves, and yet are highly contagious. Such may be the case with this disease.

These remarks may be deemed irrelevant by some, but I am the more induced to make them, from a knowledge of the fact that much of the hay of last year was of a very indifferent quality; and some practical men will tell us that even the portion that was well got in did not seem to possess that nutritive quality it does in most seasons.

The *symptoms* of this disease are now so well known to most professional men, that it would be a waste of your time to listen to their detail from me.

further than to remark upon any peculiar cases while they are under treatment; a few of which I shall select out of upwards of two hundred I have attended, and that successfully, with the loss of only one case, and that was an Irish steer, in very low condition, which had been hard driven and much neglected before it was placed under treatment, and whose symptoms were decidedly typhoid. I feel gratified to find that, with a slight exception, the treatment I have pursued with so much success is in accordance with that recommended by Mr. Wardle.

I will now proceed to the treatment and enumeration of some particular cases.

In February I was sent for by Mr. L——, to see a cow, that, to use his own words, "could not eat, and frothed at the mouth." This was the first case that had occurred within the circuit of my practice. I found her very lame behind; the tongue having three large vesicles upon it, and others upon the upper lip, accompanied with a profuse discharge of saliva. I ordered her to be placed under a warm shed, administered a full dose of cathartic medicine, dressed the mouth twice daily with a linctus composed of pulvis alumina two ounces and molasses one pound, applied with rag on a piece of stick. This I found preferable to mouth washes or solutions, as, by means of the tongue, they were longer diffusing it around the mouth.

On the second day of visiting my patient the breath was extremely offensive; but the bowels, which were before much constipated, began to act more naturally. A gentle aperient drink was now given, and, on the third day she was much relieved, could walk without halting, and was increasing in her milk, which had entirely ceased.

Nine other cows with a bull were in the same yard, and not one escaped the disease; also one in calf aborted about a month prior to her proper time.

A few days after this I was called to see the cows of the brother of Mr. L——, who lives about three miles from this place, and who had, on the morning his brother's first beast was taken ill, sent a cow to his bull. I found eighteen in number, and they all became affected, one or two falling ill daily for a fortnight.

I first administered a draught composed of the magnesia sulphas, nitrate of potassa, and antim. tart.; and if this did not sufficiently unload the bowels, I ordered it to be repeated on the following day, and afterwards exhibited in doses as long as there was any disposition to constipation, or the febrile symptoms continued present. The mouths were dressed twice a-day with the linctus before mentioned.

One of these, a heifer, also aborted, and was much debilitated after it, as was an old cow. To each of which I ordered two quarts of old ale daily, the heifer having also an ounce of nitrous spirit of ether daily.

The next yard was that of Mr. C——, and here were twenty-one cows. Four of these had lately been purchased at a fair, and all of them had the complaint before a fortnight was over. They were treated with full doses of mag. sulph. combined with nit. potass. and ant. tart. Six of them were fat, and fit for the butcher.

The owner wished and strongly urged me to bleed, but I resisted, and all did well. Some of these were affected in their feet, and I applied a mixture of alum two ounces and tar a pound, with beneficial results.

To those which evinced more debility than others, a quart of ale twice a-day was given for a few days.

The next cases which fell under my notice were six Herefords, just bought in, the property of an M.D. These were treated as the last, and recovered. Four more, apparently perfectly healthy, joined them a week afterwards, all of whom had it, were treated in the same way, and recovered.

My next cases were at Mr. Islip's, of Melchbourne, twenty-five in number, six of which had just been bought in and turned amongst the rest. Some of these were store, some fat beasts, and some in calf (heifers): they all became affected within the fortnight. The treatment before stated was had recourse to, and all recovered. Ale was given to those that shewed great prostration of strength.

A fortnight after this, Mr. Islip bought some Irish beasts; they were turned into the yard, and supposed to be labouring under the disease at the time. They had each a purgative draught, but one, as beforementioned, died.

Mr. G—— had twelve cows, some of which had lately been purchased. All of them had it, were treated as others, and did well.

April.—Mr. Baker had eighteen lying in one yard; some were young stock, others milking cows, two of which had been lately bought in. All these had it, were subjected to the treatment before stated, and ultimately recovered.

Mr. F—— bought six bullocks; one had the disease when purchased: all fell ill, were exceedingly lame, and required a repetition of the fever and tonic medicines, but are now doing well.

Mr. Thorpe had bought two. Shortly afterwards the disease shewed itself among his herd. Several had it—store, stock, and milking cows—and amongst the rest was a steer, that had long been suffering under a chest affection, and was reduced by it to a complete skeleton. The symptoms were of a typhoid nature, and rather peculiar. The membrane of the nose was ulcerated as in glanders, and his tongue a mass of putrefaction. During several days he ate nothing, and I attribute his recovery, after getting his bowels to act naturally, to giving him daily an ounce of sp. etheris nitrici in a pint of strong ale. He is now quite recovered, and, out of compliment to our exertions, we call him *Miracle*.

I could continue enumerating cases; but I think you will allow that I have already stated enough to prove the efficiency of the mode of treatment adopted by me, and which consisted in first administering a full dose of aperient medicine, combined with such agents as tend to allay the existing fever, and keeping up an action in those two powerful emunctories, the skin and kidneys. In all cases, where there is much debility accompanied with low fever, giving freely that invaluable medicine sp. ether. nit.; for much as it is thought of and prized by some, in horse practice, I will venture to assert that the more progress we make in our knowledge of the maladies of the ruminant, the more we shall value this agent. In some cases I have found it necessary to give only one draught: but in the majority of instances I have followed it up by half the quantity, and this, perhaps, I have had occasion to repeat—the symptoms, of course, being my guide.

In the few cases in which I have had recourse to tonics, they have been those derived from the vegetable kingdom, consisting of gentian and ginger, but generally I have preferred ale. My medicaments have been always given in a plentiful quantity of warm water. I know it is the practice of some of the old school to give all their medicines in ale, which certainly, in some instances, is reprehensible, the acidity in that liquor often destroying, more or less, the properties of the drug exhibited. You will perceive that I have not bled. My reason for this has been, that the disease always leaves the animal in a state of debility, which would be greatly increased were much of the vital fluid abstracted.

The epizootic appears to be nothing more nor less than an attack, from some unknown or at least undetermined agent, upon the whole of the mucous membranes, commencing at the nasal lining, and continuing its course through the trachea, &c. Whether the digestive organs are primarily or secondarily affected, is not yet decided; but I am much inclined to believe the former, and

in this supposition the successful treatment adopted somewhat bears me out. Counter-irritants are recommended by some of the profession; but I confess that I cannot see the utility of them in this disease, as, before they will act effectually we obtain all we desire by other and more certain means.

Remarks.—I have said nothing with respect to the food during the prevalence of the disease, thinking that much better left to the nurse; for what one animal fancies another will not touch. That which I give by way of nutriment, when necessary, is flour gruel.

I have found, and the owners themselves have remarked, that all our patients have thriven beyond expectation after their recovery; speaking strongly in favour of what I have long advocated, namely, periodically physicing of all cattle. You will perceive that I have given you at some length the different yards in which I have found this disease to prevail. I have been induced to do this, thinking that it goes far to set at rest the question as to the disease being contagious or not. You will perceive in most of the cases I have quoted, that fresh stock had entered the yards, or had communication with infected beasts. Many of the pigs have, likewise, been more or less affected. Sulphur and madder have been the remedies successfully resorted to for them. For sheep I always recommend a change of pasture, and warmth, with small doses of aperient medicine, and the feet dressed with the tar mixture.

N.B.—I find, on looking over these observations, that I have not said any thing about the pulse. I have generally found it from 50 to 60, and weak, indicating any thing but the use of the fleam or the lancet. To this I would add, that I have invariably found the epizootic to affect those stock most that were very low in condition. There is, perhaps, another circumstance worthy of being recorded,—I have never known the same beast have it a second time. As it regards preventives in this disease, I do not think the old maxim holds good here, that they are better than cure; since, when it first made its appearance, I was induced to adopt that system, but was soon convinced it was altogether futile, and that to administer medicines until the symptoms were fully developed was worse than useless; and so fully assured of this are some of my employers, that they do not now apply to me until some hours after the disease shews itself.

ON THE PRESENT EPIZOOTIC DISEASE AMONG CATTLE, SHEEP, AND SWINE.

By Mr. Henry Lepper, *Veterinary Surgeon, Aylesbury, Bucks.*

June 21, 1840.

From the present epizootic (aphtha) among cattle, sheep, and swine of every denomination, neither age nor sex affords the least protection. I have witnessed it in its various gradations, from the cow of ten years old to the lamb of three days only. As yet, I have not seen it in either the horse or dog, neither do I think the former animal susceptible of the disease.

While visiting the sick cattle, I exposed my horses as much as I could to its influence, and twice inoculated a mare of mine with the aphtha-virus, without its producing any effect. It appears to have visited almost every county throughout England. I hear of exceptions, but I believe they are few. It first came under my observation in the early part of March last, since which time I have witnessed some hundreds of cases.

Like other epidemic or epizootic diseases, those animals which are first attacked are visited with the greatest severity It selecting those localities

most favourably situated for exerting its malignant influence, and those places where the materials most fitting for its propagation are to be found; namely, where the greatest number of animals are kept together—where the air is least pure, and where there is a good supply of animal poison, so often spoken of by our late lamented Professor.

The disease, it appears, has received the name of aphtha; and, probably, a more appropriate name could not be substituted. My object in noticing the name is to ascertain whether it is to be viewed as an entirely new disease, or one of former date, visiting us in a somewhat new form. In looking over various accounts of different authors who have described murrain, and comparing them with the symptoms of the present epizootic, I find so much similarity, that I am disposed to consider them one disease, only in a somewhat milder character, particularly when the strange difference in the appearance of a disease in its ordinary or mild form, and when it is raging in all the virulent forms peculiar to an epizootic or an epidemic, are taken into consideration.

In the Dublin Journal of Medical Science for September last, there appeared a translation from a work of M. Rayer, giving an excellent account of a disease which prevailed in Paris and its neighbourhood and at Alfort in January, 1839, which he designates by the name of epidemic or epizootic aphtha, and describes the eruption to declare itself on the third or fourth day of its invasion, and the period of desiccation, desquamation, &c. to occupy about three weeks in its completion.

According to his stated periods of invasion, progression, and completion, it bears a much greater resemblance to vaccine variola than to the present epizootic disease, admitting the former to be in an aggravated form. Therefore, whether it is thrush in an epidemic form (which I am strongly disposed to dispute) or murrain divested of its malignant character, I leave others more competent than myself to decide. Leaving out of question its most appropriate name, I look on it as a *specific subcuticular inflammation*. Very early in the disease, nature attempts to find relief by an effusion of serous fluid, by which the cuticle is raised in the form of extensive vesicles, and the disease passes on through its various gradations, which remain to be noticed hereafter.

The disease is evidently of a contagious description; and although this is disputed by some, I think sufficient evidence may be easily collected in any locality where it has prevailed to place the question beyond dispute.

I was anxious to ascertain what would be the result of inoculation; and for the purpose of doing so I obtained a quantity of lymph from a vesicle of a cow having what is termed *aphtha* (the disease in question.)

On the 17th of April I inoculated two of my own cows in the following manner: I first saturated with the lymph some small pieces of lint, and selected for introduction the posterior part of the mammæ, and each side of the pudendum; which was done by first making an incision through the integument with a lancet, and then placing within it the lint, allowing it to remain there.

18*th*.—Slight tumefaction in the parts. Appetite and secretion undiminished (milk).

19*th*.—Swelling increased—slight serous discharge from the punctures.

20*th*.—Swelling increased, with a slight purulent discharge—appetite good—pulse slightly accelerated, about 70.

21*st*.—As I perceived no alteration from yesterday's appearance, and having a good supply of virus, I removed the lint, and charged the punctures again: this was at 8 A.M. At 10 A.M. some febrile symptoms were observed in both cows, such as a slight erection of the coat—extremities cold—frequent shifting of position, and refusing their food, which they continued to do throughout the whole of the day. At night they gave their usual quantity of milk, and on

the morning of the 22d every unfavourable symptom had disappeared, both being as well as ever. They continue to remain so up to the present time, although I have since placed them in a farm among a number of cows having the disease, where they remained a fortnight, being the whole of the time with the diseased beasts, drinking of the same water out of the same trough, and fed from the same bin.

Not one of the farmer's cows escaped the disease.

I wish particularly to notice here, that at the time they were inoculated they were confined in a temperature of 64° or 65° of Fahrenheit's thermometer.

I should have stated that they were placed with the diseased cows eighteen days after they recovered from the inoculation. I am not disposed to draw from this experiment any positive conclusion, which never should be done on any solitary instance like the present. An observation often made use of may be repeated here—"*one swallow does not constitute a summer;*" i. e. hasty conclusions are bad. Two cows, the property of Robert Ceely, Esq. surgeon of this town, were subjected to inoculation, in the same way as those of my own, but without effect. These cows were at the time in an exposed situation, and in the ordinary temperature of the atmosphere. The above gentleman is a highly talented and indefatigable labourer in the field of medical science, not only as relates to patients of his own class, but to ours also. From him I am proud to acknowledge having received many a useful hint. He has spent much time, labour, and property in the investigation of matters connected with vaccine variola, and is about to publish a luminous work on the subject. He attributes the success of the inoculation in my cows, and the failure in his own, to the difference of temperature in which the animals were kept at the time.

Mr. E. Terry, an eminent brewer of this town, keeps two cows only, one of which was attacked with the epizootic on the morning of the 18th of May. She was observed to be a little drooping over-night, and by 11 o'clock A.M. large blisters had appeared: from these the other cow was inoculated in the same way as those before spoken of.

On the 19th, considerable tumefaction on the udder, around the place of inoculation, was seen, which gradually increased until the following day, when the animal fell ill with the disease in its usual form. A vesicle was formed in this cow on the gum inside of the incisor teeth, which is a very unusual thing.

I conceive this case to be a failure in producing the disease by inoculation, as in all probability contagion had fixed on its victim before the virus had time to affect the system. Both these animals were indulged beyond what is usual on similar occasions; they were exceedingly well attended to, and had a good supply of soft food, which they consumed freely, and more particularly so after the fourth day.

The predisposing causes of epizootic aphtha are, the placing too great a quantity of cattle in confined situations, driving them long journeys, long abstinence from food and water, standing a considerable number of hours in fairs and markets, bad provender, a want of comfortable lodging, or any thing that tends to debilitate the system generally.

In numerous instances the outbreak has been clearly traced to an animal which has been submitted to one or more of the causes above-mentioned; and, after the outbreak, the more general cause is predominant,—*contagion by miasm.* I am disposed to view the disease as having two distinct stages, its primary or active, and its passive. The latter might be numerously sub-divided, as it goes through its different gradations. The disease is ushered in by a cold fit, manifested by a slight erection of the coat; extremities cold; frequent shifting of the limbs, and a diminution of the appetite. The cold fit passes off very hastily, sometimes in the short space of half an hour, and in so

slight a degree that it escapes altogether the observation of the person attending. This is quickly followed by what may be termed the hot fit; the coat resumes its natural appearance, the roots of the horns are unusally warm; the mouth presents a slight increase of saliva; the nose quite dry; the bowels in varied states, sometimes slightly constipated, and at other times voiding more frequently the fæces in a very relaxed state; the pulse slightly increased to perhaps about 70 beats in a minute; the feet tender, and the beast occasionally shaking them, as if attempting to rid them of some foreign body; the tongue swollen, and sometimes the angle of the lips, and very tender.

From six to twelve hours after the commencement of the cold fit, an effusion of serum takes place under the cuticle, at those places where it is most dense, and void of hair; it raises the cuticle in the form of extensive vesicles; namely, on the dorsum and around the point of the tongue,—*never underneath it*; under the upper lip; that portion of gum on the upper jaw which is opposed to the incisor teeth; the extremity of the nose; around the alæ nasi; the connecting portion between the hoofs, and around the top of them, and often a considerable portion of the heel of the horny sole: also on the papillæ or teats of those cows that are giving milk at the time of attack, and generally at the opening of the excretory duct. At the commencement of the desiccation, a troublesome and painful task is begun, as it is necessary to remove the encrustation from off the opening at each time of milking; and in consequence of this keeping up so much irritation in the part, ulceration and extended inflammation take place, the duct becomes impervious, and, finally, the whole gland becomes seriously affected. At the time vesication is complete, and before the sloughing has commenced, the animal feeds carefully and very sparingly. There is a constant and profuse flow of saliva from the mouth, and in some few instances emphysematous swellings extend over the back, loins, and other parts of the body, with a greater degree of constipation of the bowels. Up to this period of the disease, which I am disposed to call its primary stage, I have pursued the antiphlogistic treatment, abstracted blood (from four to eight pounds), and administered the following dose:—sulph. flor. ℥iv, magnes. sulph. ℥vj, pulv. sem. aromat. ℥ij.

From this time to about the third or fourth morning constitutes the sloughing of the raised cuticle, during which time the animal is prevented feeding to any extent, from the extreme soreness of the mouth, although it makes frequent attempts to do so. By the end of the third day, the animal has a most wretched appearance, looking exceedingly empty, the coat partially erected, the head drooping, with constant flow of saliva from the mouth; the eyes sunken, generally lying down and manifestly from two causes, debility and tenderness in the feet. As soon as the sloughing commences I have directed the mouth to be washed three or four times a day with the following lotion:—℞. pulv. aluminæ ℥j, pulv. gum myrrh ℥j, liq. communis Oiss. Although not a very chemical composition, yet the application of this has agreed with the wound, and answered the intended purpose. I have also at this stage given a little tonic or stomachic medicine, such as the following:—℞. pulv. carui sem. ℥j, pulv. zingib. ʒvj, pulv. gent. ʒvj, ft. pulv., and mix with linseed tea or common tepid water. In cases of extreme debility this has been daily given, varied, of course, according to the circumstances of the case. If the bowels were very relaxed, to the above I have added pulv. opii from ℈j to ʒj. If, on the contrary, the bowels become constipated, instead of the opium I add from ℥vj to ℥x of aperient powder.

The feet I have endeavoured to keep as dry as I could, or as the locality of the beast would admit of. I find that, by the frequent or constant application of moisture, the extent of sloughing is increased. It is on this account principally that the hind feet are suffering much more than the front in the majority

of instances. In all ordinary cases I have directed the feet to be occasionally dressed with the form of mixture given in The Veterinarian some time ago. viz. tinct. myrrh. et acid. mur. of each equal parts.

But where, from some circumstance or other, I could not get the feet kept dry, I have used the following liniment successfully, which, having little or no affinity for water, has not been so easily removed from the affected parts. Pulv. acet. cupri ʒij, tereb. com. ʒiij, petroleum ʒiij. m. ft. liniment. I have generally found that by confining the dressings to the feet with a cloth or bandage, a greater degree of irritation is kept up, and the healing process prolonged.

Having thus stated my usual treatment in ordinary cases, and returning back to the disease at about the fourth or fifth day of its existence, at which time the animal begins to feed rather freely if supplied with proper food—I will not say the appetite returns, for in the majority of cases there is an inclination to feed throughout, but an inability to do so, and recently mown clover, grass, or vetches are very proper if they can be procured, or in their absence a mixture of grains, finely cut chaff, bran, &c. forms a good substitute —the disease often degenerates into a protracted one of a low, weak, febrile type, characterized by diminished appetite; rumination lost, or partially so; disinclination to move; swellings, more or less, appear on different parts of the body, terminating in abscesses of a greater or less dimension. The most frequent situations for them are the knees, mammæ, hip, stifle, and at the back parts of the ears, &c.; and, finally, the patient is lost from extreme debility on the one hand, or very slowly recovers from this ghostly appearance on the other. Occasionally it passes from its primary stage into other diseases of a more active nature, such as pneumonia, hepatitis, nephritis, and in one case ascites wound up the scene. I believe, in most cases that have terminated in either of the above diseases, there has been some organic disease, whereby the animal has been in some degree predisposed to take on the active form of it, and consequently rendered less able to contend with it.

I attribute the few losses (and I am happy to say very few) which I have witnessed to the causes above stated.

It may be worthy of remark, that those beasts which have had the epizootic, and speedily recovered, improve in condition and fatten singularly fast. The greatest loss is amongst those cows giving milk at the time of its attack. Its secretion is greatly diminished, and in some cases never more returns. It is rather a singular feature in the complaint, that there has not been a corresponding diminution in the production of cream. I have heard it remarked by several dairymen, that the cream has been much thicker than usual, while the cows were under the influence of the disease.

I will here close my remarks on this part of the subject, by stating that the disease has so far lost its virulent character that many that are now attacked require little or no treatment; and instead of its spreading rapidly through the whole of the cattle on a farm in the short space of a few days, it now selects individuals, leaving the great bulk untouched.

Sheep and swine, I have stated, suffer equally with the cattle. The former occasionally, but not invariably, have blisters in the mouth. I have given them at the commencement, magnes. sulph. from ʒj ad ʒij, pulv. zingib. ʒij, ad ʒiij. The feet dressed with tinct. myrrhæ ʒij, acid. mur. ʒj, by which the wounds are touched every day, and the detached horn carefully removed by a sharp knife or scalpel.

The swine suffer exceedingly in their feet. In two or three instances the hoof has completely separated; and in consequence of their being so unruly a class of beings, and so very noisy when handled, the curative process has been left to nature; only giving, occasionally, doses of salts and sulphur mixed

with their food. They, unlike the cow or the sheep, do not lose their condition, as their food, generally, is of a liquid kind, and there is little or no diminution of appetite. The tenderness of the feet also disposes them to take rest, which, of course, is conducive to make fat.

The Secretary said it had gone forth to the professional public, that he considered the prevailing epizootic to be a malignant form of *eczema impetiginodes*. He could not think that his opinion was of much value, and yet, having thus expressed himself, he was desirous of stating the reason of the view he had taken. He believed, with most persons, the inquiry would arise in the mind, Is this a new disease, or have we any known affection that may be compared with it? In this investigation he thought we were warranted in drawing inferences from comparison; and perceiving the integument at its involutions to be principally affected, accompanied with some constitutional disturbance, he had referred to works on diseases of the skin of the human subject, and Rayer in his theoretical and practical treatise thus speaks of eczema: "It seems, in general, to attack those regions in which the (mucous) follicles are numerous and particularly apparent, such as the hairy scalp, the alæ of the nostrils ..... *the roots of the nails*, &c. It occasionally extends to the mucous membranes. Sometimes it is developed on the *mucous membrane of the nipple* of women; ..... and in children it extends to the *inside of the mouth*." In these particulars, indicated by italics, some resemblance, he thought, was traceable; but there were other diagnostics which did not bear, and, therefore, he was induced to look further. At page 285 of the same work, he read as follows: "frequently do we find the vesicles of eczema becoming purulent, and giving occasion to an anomalous variety of the disease, which has been described by Willan, under the title of *eczema impetiginodes*. When this variety makes its attack in an acute form, the tension, heat, and redness are considerable. It is not now mere tingling and itching that are complained of, but shooting and violent smarting pain. The vesicles now pass rapidly into the purulent state; the cuticle, raised in large flaps, is impregnated with the fluid effused, and acquires the appearance of a greenish-coloured laminated scab, which being before long detached, a surface is exposed of as bright a red as carmine. When the eruption is considerable, the ichorous fluid secreted is profuse ..... The smell of this matter is as offensive as possible; it is faint and sickly, and something like that which a large burned surface in a state of suppuration diffuses."

When the disease assumes a chronic form, and "after the bursting of the vesicles, the inflammation often increases in severity, extending to the deeper structures of the skin, and even to the subcutaneous cellular tissue ..... In the greater number of cases, the affected skin at first presents the appearance of a blister in a state of suppuration, pouring out a sero-purulent fluid of a disagreeable smell." It was from these, and similar descriptions, that he was induced to draw the inference he had. It would, of course, be for those who had far greater opportunities than himself of observing the epizootic in its varied forms to say if he was right or not; and if right, he proposed to give to the disease the name of ECZEMA EPIZOOTICA.

The febrile symptoms which are present in impetiginous diseases are frequently very severe, and the glandular system often participates; thus it is that in cows the secretion of the milk becomes altered in character, being thin and watery, and diminished in quantity.

The state of the feet he referred to eczema attacking that part which joins the wall of the foot with the common integument, and from this the inflammation soon finds its way down to the vascular structure of the foot, which, taking on diseased action, causes a separation between the sensitive and horny covering. Eczematous onychia is by no means uncommon in the human

subject when eczema exists on some part of the body, the matrices of the nails becoming inflamed during the course, or as a consequence of this disease, and the nail being thrown off.

As to the cause of the epizootic, he was quite contented to leave the investigation of that to others. The sympathetic relationship existing between the envelope of the body and the mucous and serous membranes is well known, and when functional derangement in the one is produced, the other becomes quickly involved. It may, therefore, be referred either to the peculiar state of the air or of the provender; probably both are in operation.

He certainly could not consider the disease as simply aphtha, as do the French and others; because we find the vesicles existing in other parts of the body besides the mouth, and sometimes the mouth is not affected. There may be much similarity in the vesicle; but from the fact that other parts are involved, he considered the term inapplicable, and likely to lead to confusion. Nor could he agree with those who viewed it as a mere local affection; and yet he thought it possible that, when communicated by contact, at first it might be so, but very soon the constitution sympathizes. Or it may be a disease generated in the system, shewing itself in a local form. It has been well observed by Mr. Erasmus Wilson, that "the diseases of the skin form a field of inquiry, which all writers have acknowledged to be one of great difficulty and obscurity, and which seems to set at nought the best directed efforts of the surgeon."

That alterations in the state of the atmosphere, whether hygrometric or electrical, should produce a diseased condition of the skin of many of the patients of the veterinary surgeon is not at all surprising; and when to this is added the fact, that their food has not been of that nutritive character of late years, from the wet weather which has so much prevailed, he thought a clue, at least, was given to the origin of the epizootic. He, therefore, was not inclined to view it as the result of certain unknown and undefinable gases emanating from the soil, and tainting the surrounding air, which, labouring under intestinal throes, disgorges its foul contents; but rather as the consequence of derangement of the organs of digestion, from the unnatural state of the provender, coupled with the existence of a dermic diathesis, from the humid condition of the atmosphere. It is very easy to assert that certain gases are the cause; but the questions which arise are, What are they? Whence come they? and Has their existence ever been demonstrated? I fear the assertion often betrays a love of ease, and a disinclination to make further investigation, lest ignorance should be exposed. If it be miasm, why has not the same disease shewn itself among our flocks and herds, when this poison has been producing its pestilential effects for ages?

That certain gaseous matter may be absorbed by the blood in its transit through the lungs, thus altering its quality, and, as a consequence of this, we may have diseased action set up in the various organs and tissues of the body, is a fact, I think, none at the present day will be found bold enough to attempt to deny; but the same cause is necessarily productive of the same or, at least, similar effects. Until the existence of these supposed gaseous matters is clearly proved, he must be contented to refer the cause of the epizootic to that which he had assigned. He certainly could not say that these gaseous matters did not exist in the bowels of the earth; but it was quite as possible they may have their existence only in a fertile imagination.

The contagious nature of the epizootic has necessarily awakened inquiry. There are those who hold it to be highly so, and others consider it to be the reverse, from their never having been enabled to produce the disease by inoculation. Mr. Simonds had related to him the following circumstance. A farmer in his neighbourhood had purchased two calves in Smithfield Market,

and placed them with two of his cows, which were apparently healthy. In two or three days the cows' teats were perceived to be diseased, and upon examination of the animals' mouths, they were found to be covered with vesicles. Now, before this time the epizootic had not been known in the neighbourhood, but other cows were soon affected, and it has now become general.

The following experiments by Mr. Simonds are, perhaps, still more to the point. Attending a dairy of cows that were diseased, he introduced a wisp of hay into the mouths of several of them, so as to break the vesicles, and this hay he placed in the mouth of one of his own cows, which, at the time, shewed no symptom of the disease. In a few days she became affected, and suffered severely from the epizootic; but another cow that was with her was unaffected. When in this state, the milk withdrawn from her was given to a litter of pigs, all of which also became diseased.

In a conversation which he lately had with Mr. Habin, of Chichester, he communicated to him one or two strong facts, which also seemed to him to prove its contagiousness. The first was that of a a flock of sheep, which had followed others affected with the disease in their return from the market, and on the following day shewed symptoms of the malady in their feet. The second is, perhaps, more conclusive. A cow, apparently perfectly healthy, had been standing in the market by the side of others labouring under the epizootic, but, not being sold, she was housed until the next market day. On being removed to her stall she had to pass a bull. The third day after this the disease broke out; she, however, got well, and was sold on the following market day for the price first asked; so that this would appear to have been a very slight attack of the disease.

Two or three days after this, the bull became affected; and when the violence of the symptoms had abated, he was allowed to serve cows. The result was, that several became diseased, and communicated the malady to whole dairies; nor were there at that time any other cows in the neighbourhood similarly affected.

Now these, he repeated, were strong facts, and yet some may say they are not irrefragable proofs of the contagious nature of the disease, since such is the capriciousness of epizootics, that they will often choose the one and leave the other. One district may be affected, and not the contiguous one: one animal, and not his fellow, arising from causes we are altogether unacquainted with.

He had the gratification to read the following letter, giving a description of the appearance of the blood and milk in this disease. He would, however, observe, lest any unnecessary alarm should be created, that the mammillary gland was as anticipated by the author of the communication; for when the animal was destroyed, it presented a mass of small abscesses; so that it was no wonder that pus globules were mixed with the milk. He had intended to have instituted a chemical investigation of this secretion; but from the rapidity with which it ran into the putrefactive stage, and the disgusting odour emitted from it, he was unable to do so to any extent. He was, however, enabled readily to detect the existence of pus, which did not appear to be deficient in caseum, while it quickly separated into two parts.

Mr. Lepper having kindly forwarded to him a little of the fluid taken from a vesicle on the upper lip of a cow, the following were its characters:—Colour, pale amber; odour, scarcely any; taste and reaction alkaline, from the salts of soda—the hydrochlorate and the carbonate; spec. grav. 1.01. Heat and acids rendered it turbid, from the diffusion of coagulated albumen. It is, therefore, closely allied to serum; but contained less albumen, since it never firmly coagulated. There was no purulent matter commixed with it.

Letter from Mr. DALRYMPLE *to the Secretary.*

Dear Sir,—I owe you an apology for not having written before this, to thank you for the specimens of blood and milk from the diseased cow. The blood was perfectly healthy (microscopically examined), the globules of their proper size and proportions; and there was no admixture of pus molecules with the blood.

The milk was quite putrid; but still there were pus and blood globules mixed with the true milk globules. The blood, indeed, in considerable quantity, and the molecules aggregated together in little clusters, like minute coagula. Nevertheless the milk was in so very decomposed a state, although examined within half an hour of its reaching my house, that it was not easy to determine whether there were any other abnormal bodies mixed with it.

I should be led to infer that there exists some ulceration in the milk cells of the udder of these cows.

I am, &c.

The Secretary then read his Annual Report.

THE SECRETARY'S REPORT FOR 1839-40,

FOURTH SESSION.

A retrospect of the past is sometimes pleasant, occasionally painful, but always profitable.

By it we are enabled to see the progress that has been made, and to ascertain whether that progress has been beneficial or injurious. Thus we are taught to unfurl the banner which has been planted, or to raise a beacon against threatening dangers: to continue in the same course and without any deviation, or to track out one of greater safety for the future. Societies, therefore, have wisely directed that reports of their proceedings shall be periodically made to their members.

It is possible that the beginning of the fourth session of the VETERINARY MEDICAL ASSOCIATION may not have been characterized by any great event; yet sufficient proof was given of the same cordiality of feeling, and oneness of sentiment still existing among its constituents which, from the commencement of the institution, had marked its onward course, and which are the earnest of its continued prosperity.

Its Anniversary Meeting boasted of a greater number being present than on any antecedent year. Nor are these re-unions undeserving the support of the members of the profession, for they tend to foster and cement those feelings of friendship which it is desirable should always be maintained. Feelings which, perhaps, originated at a time when Hope was young, and Thought not yet matured had pictured bright but never-to-be-realized visions of

the future; when nothing could have made us believe the description given by the immortal bard to be true, that

> "Life is as tedious as a twice-told tale,
> Vexing the dull ear of a drowsy man."

When as yet the bitter waters of affliction had not been tasted, nor the shadows of disappointment crossed our joyous path; but each, actuated by a spirit of emulation, excited the other to the performance of deeds worthy of the cause in which we were engaged. Since then Providence, in all probability, has cast our lots in different localities; and it is only on such occasions as these that we are enabled to revert to past events, and tell of by-gone scenes. These meetings will awaken a desire for greater reciprocal communication, producing an interchange of ideas on subjects connected with our common science, from which it cannot fail to be benefitted.

At its first business-meeting a change of officers necessarily took place, on account of the recent death of the Patron, Professor Coleman. And on whom with greater justice could the distinction have been conferred than on him who, while its President, had with undeviating zeal encouraged every act that was calculated to promote the advancement of the Association? Professor Sewell was, therefore, unanimously and with acclamation elected Patron.

Fortunately, no difficulty presented itself in the election of a successor to the important and responsible office he had filled. There was one, not less zealous than him, who by his lucid remarks on the subjects introduced for consideration had often rendered them of the highest value: to him, consequently, the votes of the members were unanimously given, and Mr. Assistant Professor Spooner, to the honour and advantage of the Association, was chosen President.

As their Treasurer, they elected one to whom the debt of obligation is too great ever to be cancelled. Mr. Youatt, from the very beginning of the Association, had thrown the efforts of his mighty mind into its affairs, and his influence can be traced by the observant through all its proceedings. The Institution was in perfect unison with his views and wishes. He loved the cause of truth, and knew full well that the only way to attain it was by calm, dispassionate, and independent discussion.

The members were not less happy in their choice of Vice Presidents from the body of the profession. What wonder, then, that with such an auspicious commencement there has been a continuance of the working out of the objects of the Association! That the expectations of the many were raised that something would be achieved this year, something more effected than hitherto had been! Has the cup of anticipation been dashed to pieces, and our hopes become like water spilt upon the rocks? Let the following analysis be our reply.

At the second meeting of the Association there were laid upon the table many things appertaining to veterinary science which had been forwarded to the Secretary, during the recess, on account of their novelty or utility. Mr. Simonds presented for the approval of the members a needle that he had invented for carrying the flexible suture-wire introduced into veterinary practice by the President. Mr. Ernes exhibited an improved knife for dividing the nerve in the operation of neurotomy; and the Secretary a seton needle for passing his medicated cotton cord or tape; a material which he considered to possess properties that rendered it of worth to the profession. Since that time an improvement in the torsion forceps has been made by Mr. Wardle, and some valuable alterations suggested in the probangs used for dislodging substances impacted in the œsophagus, by Mr. Simonds, with a new apparatus for withdrawing pieces of turnip, &c. that may become fixed in the upper part of the œsophagean canal. Mr. Read, the well known veterinary instrument maker, likewise kindly explained his newly-invented inhaler for horses labouring under inflammation of the air passages; and Mr. Daws shewed an enema syringe in which he had made some evident improvement. This, which may be deemed a novelty, merits encouragement; and the members appreciating the intention of the individuals, were not slow in awarding them their thanks.

Pathological Contributions.

Among the contributions to morbid pathology we have to enumerate a quantity of calcareous matter from the bladder of a horse, with a brief history of the case, furnished by Mr. Baldwin; nor have our friends, generally, forgotten this interesting division of science. Taking the specimens in nearly the order in which they were received, Mr. Daws forwarded the stomach and other diseased viscera taken from a horse that for a long time had laboured under a chronic affection of the alimentary canal, the symptoms indicative of which strongly resembled those of a case recorded in the Proceedings of the Association during the last session. To him we were subsequently indebted for specimens of fungus hæmatoides and scirrhous cord, and other morbid parts. He also contributed towards the beautiful and large number of specimens of diseased osseous tissues sent by Mr. Mavor and Mr. Simonds for the purpose of illustrating Mr. Bottle's thesis on Bones. To the former of these gentlemen we are likewise under obligation for having sent the lungs and trachea of a horse that had been affected with disordered respiration in a severe form for many years, and which elicited from the President some useful observations on the nature of those diseases of the respiratory organs. To the latter, for having directed the attention

of the members to the singular circumstance of the bronchial tubes of a cow which had died of puerperal fever being filled to distention with food which had undergone mastication—to the existence of a congenital hydatid in the brain of a lamb only a few days old; and to a gravid uterus containing a lamb of considerable size, which he was unable to remove during life from its being a false presentation, connected with other peculiarities.

Mr. Bainbridge sent the kidneys, bladder, and part of the liver of a cow that had died while labouring under the disease designated red-water. Mr. Rose, the foot of a cow, presenting a strange abnormal growth; and Mr. Stavley some feet of the same class of animals, shewing the effects of the prevailing epizootic on the vascular parts. Mr. Woodger presented a fractured pastern bone, the peculiarity of the case being that the horse had walked twenty-four miles after the accident without evincing much pain, and by attrition the divided edges of the bone had become polished. A ruptured liver, with the history of the case, was also received from him. Mr. Wardle forwarded a lamb that had suddenly died while gambolling by the side of its mother. On inspection, it was found that a rupture of the vessels of the *plexus choroides* had taken place. Also two feet of a horse affected with chronic laminitis, in which was beautifully seen the large amount of interstitial matter thrown out between the laminæ, and the consequent displacement of the bones by pressure, so that from the excessive pain produced by concussion, the animal was scarcely able to walk. To Mr. Powell we were indebted for a ruptured hypertrophied heart.

The renal calculus commented on by the President, and the report of the case of vesicular calculus that occurred in the College Infirmary, which he had successfully operated on, must not be passed over altogether unnoticed, as they serve to mark the progress of veterinary surgery, and may be the means of calling forth the latent talents of some of the members of the profession, so as to obtain a method by which with safety and certainty these concretions may be removed from the bladder, and the operation reduced to one of extreme simplicity. Mr. Mogford furnished a specimen of introsusception in a cow, accompanying the same with some remarks, which will not be soon forgotten, on the value of the study of morbid anatomy to the student of veterinary medicine; while the diseased parts received from Mr. Robinson, of Tamworth, merited the attention of the Association, and drew forth opinions from its members on the nature of puerperal fever in cattle, which, although it cannot be said that they led to a certain and definite conclusion, yet must be productive of good; since it is only by the repeated investigations of those whose abilities render them equal to the task that the knowledge of the true character of this disease can be arrived at.

May the next session be as rich in this respect as the now passing one has been!

Communications.

At the early part of the session we had to acknowledge the receipt of communications from Messrs. Collins, Dray, D. McTaggart, and Walter Richardson, on the subject of Castration. To Mr. Darby we are indebted for an interesting letter containing an account of Influenza in Sheep. To Mr. Dawber for the history of two cases of ruptured and distended Bladder in the Horse. To Mr. Duffield and Mr. W. Rush for lucid descriptions of the prevailing Epizootic among Cattle, Sheep, Pigs, &c. To Messrs. Baldwin, Dickins, Dycer, and Lepper our best thanks are due for similar communications; and to Mr. Mayer, jun. for an account of an unusual Deposit from the Milk of a Cow.

Mr. Read, of Crediton, made known to us the influence of certain therapeutic agents; and Messrs. Wills, Rolfe, Rush, and Daws laid us under similar obligations.

All these are means conducive to the accomplishment of the great object of the Association. And it will be observed, that many of our corresponding members have been among the contributors; thus have we been gathering some of the rich fruits we anticipated.

May this increase with increase of years; since by it we are enabled to accumulate facts, and by subsequently reasoning on them, to lay even more securely than yet have been laid the foundations of veterinary science; while the superstructure will be raised both easily and almost imperceptibly, and yet with a confident assurance of its stability.

Essays.

The first essay read was that "On the Ear of the Horse, by Mr. F. J. Sewell," which had obtained the silver medal. It was not intended for discussion, and therefore no argument was elicited by it. To this followed a paper on "Torsion," the first fruits of the Club of United Veterinary Surgeons; drawn up and presented by their Secretary. It is confidently hoped that there remains a rich harvest in store, and that this is but a precursor of much yet to be derived from that body. The remarks on the first evening of its introduction were principally directed to the mode of casting the horse, and the necessary preparatory treatment; and, although this may have been thought a digression by many, still it is hoped that some useful facts were made known, by which the junior members of the profession, at least, were benefitted. But whatever disappointment was then felt was amply compensated for on the next night of meeting, when the advantages derivable from this mode of staying hemorrhage

were given by those whose opinions are justly esteemed by the profession, and who are subjected to the only valuable tests, that of repeated experiments.

The subject of the next thesis was "THE FORMATION, STRUCTURE, AND DISEASES OF BONE, by Mr. Bottle," than which nothing could have been more opportunely brought forward. It was the beginning of a new session, one possessing peculiar features, and when many were about to enter on the study of that science which has been deemed the foundation of medicine: an acquaintance with osteology was, therefore, of paramount importance. The diseases to which the osseous tissue is liable received admirable elucidation from the morbid specimens already adverted to, and the observations made by the contributors have enriched the published Abstract of the Proceedings of the Association.

The paper on INFLUENZA IN CATTLE AND SHEEP, by Mr. Evison, was another pledge of the endeavours of the Association to assist in rendering the education of the veterinary student more perfect, by the dissemination of those principles which will lessen the sufferings of our domesticated animals when labouring under disease. The same observations will apply to the papers subsequently presented by Mr. Fox and Mr. Gresswell.

The illustrative cases that closed Mr. Bowles' ESSAY ON THE GENERATIVE ORGANS will be read with interest.

Mr. Hughes' thesis on ANIMAL HEAT contained much that naturally awakens thought and excites inquiry; but, from the difficulties connected with the subject, the discussion that took place possessed but little to distinguish it.

Mr. Cartwright's paper on PHLEBITIS was highly practical and useful, and the argument which followed animated and of value. These circumstances may perhaps serve to shew the usefulness of essays on practical subjects; for, however delightful the region of speculative theory is, it seldom leads us to the realization of much good. Nevertheless, it is not to be shunned or contemned, as an hour may be pleasantly and profitably spent in tracing effects up to their causes, and endeavouring to find out some of the many wheels by which the machine of animated nature is kept in motion and in order.

Although nothing novel existed in the paper on OPHTHALMIA, by Mr. Croxford, yet good must ultimately result from the frequent consideration of this disease. Its proximate and ultimate causes are almost of necessity inquired into; and a means of prevention may thus ultimately be obtained, since it is as much the duty of the veterinary surgeon to prevent disease as to assist in its eradication.

The all-important subject of "INFLAMMATION," selected by Mr.

Sibbald, could not fail to draw forth a spirited debate. This was appropriately followed by a thesis on "THE SEQUELÆ OF INFLAMMATION," by Mr. Faulkner, which, in like manner, afforded ample matter for argument.

The opinions of those eminent in the profession on a subject so replete with interest as the art of Shoeing, were incidentally obtained by Mons. de Gournay, the patentee, introducing his newly invented shoe for being fastened on the foot of the horse without nails. The discussion that followed cannot fail to have been read with interest by those who, not being present, have, through the publishing of our proceedings, been made conversant with a highly ingenious invention, although its general applicability may perhaps be doubted. Time, however, that sure test-stone of all improvements, can alone decide the question of its utility.

The paper on "A NEW MODE OF TREATING OPEN JOINTS," sent to the Association by Mr. Stevens, was rendered of less worth by the unavoidable absence of its author. The members, however, cannot refrain from expressing their thanks to him for the freeness with which he has made known to them his discovery, and the interest he thus manifested in the welfare of their institution.

The interesting observations, by Dr. Gilmeister, on the Epizootic, as it shewed itself among the cattle, &c. in Germany, in the year 1839, were very acceptable; and to Mr. Ernes we are much indebted for their translation, and for acting as interpreter. These, with the other communications received during the session, prove the value of this and similar associations.

The paper on "INFLAMMATION OF THE LUNGS," by Mr. Fisher, certainly presented no new feature, and equally barren was its consideration. But may not this, in a great degree, arise from the advancement which the veterinary art has, within these last few years, made? The diagnostics of diseases are better understood, and the principles of their treatment more clearly laid down. This, too, has led to the distinctions which are now drawn between affections of the respiratory organs by those who have made that important and interesting division of medicine, namely pathology, their particular study. At one time it was customary to place nearly all pneumatic diseases under one common head, and designate them inflammation of the lungs. A clearer light, however, has been diffused by the torch of science, which will irradiate recesses yet unexplored, and be the means of mitigating yet many more of "the ills which flesh is heir to."

What shall we say of the proceedings of this the last evening of the session? The communications I have read need no words of commendation; and they will be perused by others, hereafter, with increased gratification. As we approach the termination of our

sessional labours, and when we have reason to hope they have been profitably performed, what a thrill of delight pervades the mind! We look back upon the past with satisfaction, and to the future with an ardent and assured hope, that even more good will be effected; that each succeeding session will be better than its predecessor; that this, which has now nearly passed, may be only prelusive to greater acts to be achieved in the following session; for while we think we have done little, much still remains to be accomplished. Let us, then, not become weary of well doing, for we shall reap if we faint not.

The LIBRARY has received considerable additions by purchase, and the following donations have been made to it. These are recorded with gratification, since the possession of a valuable library has always been with the Council an object of solicitude, because it affords sources whence the student may derive much information. It is also satisfactory to know that the pupils have availed themselves of the use of the books more frequently during this than any antecedent year.

THE GOVERNORS OF THE COLLEGE presented—

FOLIO.

Stubb's Anatomy of the Horse
La parfaite Connoissance des Chevaux
Snape's Anatomy of the Horse
Monro on the Nervous System
Sollysel's Complete Horseman
Newcastle's Horsemanship, 2 vol.
Ruelli's Vétérinaire Médécine.

QUARTO.

Scacco della Mescal
Gibson on Horses
Sportsman's Dictionary.

OCTAVO.

Demonstrationes Elémentaires de Botanique, 3 vol.
Médécine Vétérinaire, par M. Vitet, 2 vol.
Dictionnaire d'Hippiatrique, par M. Lafosse, 2 vol.
——————————————— 4 vol.
Bourgelat. Essai Théorique et Pratique sur la Ferrure
——— Elémens de l'Art Vétérinaire
La Science et l'Art de l'Equitation, par M. Du Paty de Clam
Nouveau Régime pour les Haras, par Esprit Paul de Lafont
Gibson on Horses, 2 vol.
——— Farrier's Guide
——— Farrier's Dispensatory
Pole's Anatomist's Instructor.

Mr. H. W. SPARROW, V.S. :—

Duncan's Edinburgh Dispensatory
Forsyth's Medical and Surgical Dictionary

Pollock's London Pharmacopœia
Lee's Chemical Diagrams
Blacklock on Sheep.

Mr. J. TYRREL, V.S. (the Author):—

"Consumption, why so fatal?" 2 copies.

JOHN COLEMAN, Esq.:—

Dictionaire de Vétérinaire, 6 vol.

Professor CARLO LESSONA (the Author):—

Annali de Vétérinaria, Fas. 6
Patalogia del Cavalla
"Sulla non Esistenza del Contagio nella Peripneumonia"
Della Rabbia
Dell Arte della Ferratura nel Cavallo
Richerche sul Tetano.

Professor DELWART (the Author):—

De la Parturition des principales Fémelles Domestiques
Pathologie Spéciale, ou description des principaux Animaux Domestiques.

Mr. G. CORBETT, V.S. (the Author):

His Essay on the Eye of the Horse, and Lameness.

Mr. J. HOLLINWORTH, V.S.:—

White's Veterinary Works, 4 vol.

Mr. W. C. SPOONER, V.S. (the Author):—

His Treatise on Influenza in Horses.

Mr. H. Lepper, V.S.:—

Every Farmer his own Farrier. 1759.

Professor MASSA (the Author):—

Corso Completo de Chirurgia Vétérinaria, 4 vol.
Storie d'Alcune periclose, &c.

Mr. J. SEWELL, Sen. V.S.:—

The Country Farmé. By G. Markham. 1616.

Mr. ERNES, V.S.:—

Traite du Pied, par J. Girard
Eloge de M. Huzard, par M. Rainard.

Dr. HODGKIN:—

Rapport sur un Mémoire de M. Foville, entitle Récherches sur la Structure de l'Encéphale, &c.
Considerations sur la Structure de l'Encéphale, &c. par le D. Foville.

THE SECRETARY (the Author):—

Manual of Veterinary Pharmacy. 2d edition.
Essay on the Diniodide of Copper
A Veterinary Toxicological Chart.

During the session, fifty Members have been elected. To forty-one, the Certificate of Membership has been awarded; and to ten, that of Fellowship, for Essays introduced for discussion: the total number read being fourteen. Of these the Council have deemed

Mr. Daws . . .	on Torsion
Mr. Bottle . . .	on Bone
Mr. Hughes . . .	on the Changes which the Blood undergoes, and the Source of Animal Heat
Mr. Cartwright . .	on Phlebitis
Mr. Sibbald . . .	on Inflammation, and
Mr. Faulkner . .	on the Sequelæ of Inflammation

worthy of the especial thanks of the Association, and by which those gentlemen rank as HONORARY FELLOWS.

The following have been elected as

HONORARY ASSOCIATES:—

Professor Delwart, Brussels
— Theirnesse, ditto
— Lassaigne, Alfort
— Rainard, Lyons
— Mazza, Naples.

PRIZE ESSAYS.

Again there is cause to regret the want of support manifested by the constituents in this division, which, it was anticipated, would have been the means of calling forth much latent talent.

Only one thesis was received from practitioners on a subject so important and interesting as VESICULAR CALCULI; and although it contained much valuable matter, yet, as no competition had taken place, the Council did not feel themselves warranted to award the prize for it.

Two theses were received from students; the subject for them being, THE ANATOMY AND PHYSIOLOGY OF THE TEETH OF OUR DOMESTICATED ANIMALS. So equal in merit were they, although very dissimilar in style, that the Council dubitated to which the palm should be awarded; and therefore, as a stimulus to the exercise of the abilities of those who may come after, as well as to reward the industry of the authors of these Essays, they resolved that a silver medal should be presented to each. The successful competitors were Mr. I. J. Hughes and Mr. W. Litt. The one

had chosen for his motto, "Dum spiro spero;" the other "Amator scientiæ." May both continue what they have shewn themselves to be—lovers of science! for, while a praiseworthy ambition excites in them a desire to excel, what they in hope aspire after and laudably endeavour to obtain, they will assuredly realize in full fruition. The highest science is but an imperfect acquaintance, at best, with the laws impressed by the Creator upon matter when He formed the universe, and shadowed forth His almighty power in the formation of these His lower worlds.

"On heavenly ground they stood, and from the shore
They view'd the vast immeasurable abyss,
Outrageous as a sea, dark, wasteful, wild,
Up from the bottom turn'd by furious winds
And surging waves, as mountains, to assault
Heav'n's height, and with the centre mix the pole.
* * * * *
But Chaos heard his voice, and on the wat'ry calm
His brooding wings the Spirit of God outspread,
And vital virtue infused, and vital warmth
Throughout the fluid mass, but downward purg'd
The black tartareous cold infernal dregs
Adverse to life: then founded, then conglob'd
Like things to like, the rest to several place
Disparted, and between spun out the air,
And Earth self-balanc'd on her centre hung."

"Science, serious and meditative, takes upon herself the task of unveiling to us the cause of all things, the hidden principles which govern the harmony of the universe. She takes her way over the snowy summits of the Andes, and by the fiery gulphs of Etna and Vesuvius. She explores the watery savannahs of the Missouri and the burning sands of Lybia; examines the bowels of the earth, and considers the movements of the ocean. She counts the facets in the eye of the insect, and numbers the stars of the firmament; pauses before the cedar, and bends to collect the moss at its feet. She dissects light, weighs air, delineates sound, measures heat, imprisons the electric fluid, employs vapour as a power, and magnetism as a guide. She advances, recedes, stops, reflects, strays frequently, retraces her steps, regains the right path, and proceeds with courage; and everywhere finds new wonders in the magical domain of nature. Such is science."

Thus has a review been taken of the proceedings of the Session. And surely there is much cause for gratulation; and abundant proof has been afforded of our continuing to progress in the working out of those objects for which the Association was formed. Methinks I hear the exclamation—ESTO PERPETUA!—ready to burst from the lips of many around me; and who will refuse to join with them and add the hearty and sincere AMEN?

Turn we now to a far less pleasing subject:

> Yet 'tis a change that must come over all,
> For all have sinned.

Death has again made sad inroads upon us; and, besides our Patron, we have lost,

Mr. Bagnall, of Liverpool
Mr. Coates, of Manchester
Mr. Field, of London.
Mr. Jackson, of Burnley
Mr. Price, of Cork.

Surely, it is fitting that we should advert to the dismemberment which the grim tyrant, from time to time, thus makes amongst us. That man's mind must be morbid indeed who would turn away the ear with indifference from recitals such as these, or restrain the feeling of sympathy which arises in his bosom when he hears of the final departure of his friends. And, although dying to the good man is but going home,

> "Sure, 'tis a serious thing to die! My soul,
> What a strange moment must it be when, near
> Thy journey's end, thou hast the gulph in view!
> That awful gulph no mortal e'er repassed
> To tell what's doing on the other side."

Each succeeding year we have had to record the passing of some of our constituents to the place appointed for all once living. They are gone "with kings and councillors of the earth to the land of darkness and the shadow of death:" "there the wicked cease from troubling, and the weary are at rest." There the vassal and his lord, the peasant and the prince, lie down together, "shake hands with dust, and call the worm their kinsman." The too-oft-dreaded summons has been again and again issued, "Return, ye sons of men;" and the irrevocable mandate has gone forth which no human power can resist. One has followed another into eternity. Some have quitted life's probationary state in full age, like a shock of corn ripe in its season, their work of labour done; others, in the prime of manhood, when as yet the half of our expectations from them had not been realized; their notice

> "Short as the watch that ends the night
> Before the rising sun."

Truly, "man that is born of a woman is of few days and full of trouble. He cometh forth like a flower, and is cut down: he fleeth also as a shadow, and continueth not."

How beautifully appropriate, simple, and yet touchingly true, is the resemblance of man to a flower; for,

"We have short time to stay, as it;
We have as short a spring,
As quick a growth to meet decay
As it, or any thing:
We die
As its hours do; and dry
Away
Like to the summer's rain,
Or the pearls of morning dew;
Ne'er to be found again."

"Then tell me, weary pilgrim, which is best,
The toilsome journey, or the traveller's rest?"

The top stone of the pyramid having been removed, another was chosen in his place. May he remain for many years to come! while we, remembering the noble examples set by those who are but gone before us, and stimulated by the ardour they manifested in the pursuit of that which tended to the general good—may we, like them, be up and doing! for, heed we or heed we not, the flood of time rolls onwards in its course, and in it we, too, must be engulphed in following years, "the place that knows us now, knowing us no more for ever." We, like them, shall pass away and be forgotten; our situations being filled by others far more worthy. And can we say, that even now the sickle has not been thrust in among us, and ere to-morrow's sun some may be cut down to wither and to die?

"To die:—to sleep:—
To sleep! perchance to dream: ay, there's the rub:
For in that sleep of death what dreams may come,
When we have shuffled off this mortal coil
Must give us pause."

I have again compared the Association to an imperishable pyramid—

"The Egyptians' pride,
And wonder of the world; whose spiky top
Has wounded the thick cloud, and long outliv'd
The angry shaking of the winter's storm;"

and I cannot refrain from expressing my conviction, that we have, during the present year, tended to consolidate the structure. It is true, it has met with some opponents, since there are those who, holding very erroneous opinions, assert that evil rather than good results from the diffusion of knowledge, and that we are not wise in publishing our reports. As well might light be designated the cause of darkness, and happiness the source of misery.

Truth, the object of science, may, however, be conveyed to the mind by various ways, and the manner will often determine the effect produced. In its search much patient investigation is frequently called for; its progress is generally slow, and a long continuous course of dispassionate reasoning has, at times, to be exercised before it is attained; nevertheless, its possession always compensates for the labour of the pursuit. It is thought, and in some degree proved, that the means chosen by the Association rank among the best that have been devised for this end; nor is there any fear of this being eventually obtained while there exists among us a spirit of cordial co-operation. And shall it be said, that we are in the possession of plenty, and withhold from others? Shall the streams run into the sea, and the waters thereof not again go forth to fertilize the soil, and cause the seed to germinate and grow, yielding yet richer fruit, which being not forbidden we may pluck and eat and live? Banish such selfishness! Then should we, indeed, resemble the sandy desert, which greedily drinks in the falling shower, and, ingrate as it is, gives not back a dew-drop.

Some, too, there are who not only withhold the hand of friendship from us, but covertly malign and ineffectually attempt our injury. Our unsuspecting charity would have thought such there could not have been; and while we may contemn their efforts, we would still desire to speak of them "more in pity than in anger:" for they can feel no interest in the onward march of science—their breasts glow not with joy at its advancement—ignorance to them must be bliss—and, being traitors to our common cause, may we not apply to each the language of Scotland's proud bard? The theme which called it forth is scarce less worthy—*his* was the patriot's cause; *ours* is that of science:—

> "If such there be, go mark him well:
> For him no minstrel's raptures swell;
> High though his title, proud his name,
> Boundless his wealth as wish can claim:
> Despite that title, power, and pelf,
> The wretch, concentrate all in self,
> Living, shall forfeit fair renown;
> And doubly dying, shall go down
> To the vile dust from whence he sprung
> Unwept, unhonoured, and unsung."

Finance Account, Session 1839-40.

Cr.				*Dr.*			
By Balance last Session....	17	3	7	To Books for Library.....	14	17	0
Balance on Dinner.....	5	8	0	Periodicals.....	5	17	9
Members' Fees.....	52	10	0	Binding of Books.....	8	5	8
Members' Fines	1	12	0	Printing Rules, &c.....	12	8	6
				Prize Medal.....	3	13	6
				Carriage, Porterage, &c.	2	18	9
				Chair for Library, &c...	0	16	0
				Stationery.....	0	18	6
				Pattern Boot for Leg...	0	15	0
				Salaries.....	15	0	0
				Balance on Session.....	11	2	11
	£76	13	7		£76	13	7

W. J. T. MORTON, *Secretary.*

On the motion of Mr. G. Fisher, the Thanks of the Members were awarded by acclamation to the different Officers, which being acknowledged by those present, the Session was closed.

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